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Academic stress among Indian adolescent girls

Sreevani Rentala, Raghavendra Bhemappa Nayak¹, Sugnyani Devi Patil²,
Gayatri Subray Hegde³, Rajashree Aladakatti⁴

Abstract:

CONTEXT: Academic learning is the main source of stress among adolescents and is associated with mental health problems; finding its determinants helps to know the risk factors that influence stress.

AIM: The main aim of the study was to assess the educational stress and their predictors among adolescent girls.

SETTINGS AND DESIGN: A cross-sectional study was conducted in ten colleges involving adolescent girls pursuing preuniversity and university studies at Dharwad city, India.

SUBJECTS AND METHODS: The study included 314 randomly selected adolescent girls aged between 16 and 19 years. The study was approved by the institutional ethics committee. Data were collected by employing random sampling technique. Self-administered questionnaires were administered which included sociodemographic data sheet, personality inventory, intelligence quotient (IQ) assessment, and educational stress scale for adolescents.

RESULTS: Mean educational stress was 50.04 ± 10.82 (range 16–80). There was a significant association between educational stress and religion, father education, number of siblings, combination of subjects, type of personality, and IQ. Regression analysis revealed that number of siblings and extrovert neuroticism personality negatively predicted stress ($\beta = -0.115$, $P = 0.037$; $\beta = -0.242$, $P = 0.001$) and considered as protective factors. Introvert neuroticism, Hindu religion, illiterate father, and commerce combination of subjects positively predicted stress among adolescent girls ($\beta = 0.160$, $P = 0.026$; $\beta = 0.119$, $P = 0.028$; $\beta = 0.125$, $P = 0.017$; and $\beta = 0.278$, $P < 0.001$) and considered as risk factors.

CONCLUSIONS: Findings help in better understanding of educational stress factors among adolescent girls and consider them while developing stress prevention programs.

Keywords:

Academic stress, adolescent girls, educational stress, predictors of educational stress

Introduction

Adolescence is the period in human growth and development that occurs after childhood and before adulthood and considered to be the period between the ages of 10 and 19 years. It accounts for approximately 17% of the world's population.^[1] India is home to the largest adolescent population in the world.^[2] During this period, adolescents undergo

many psychosocial and physiological changes making them more prone to various stresses.^[3] For them, academic related events are believed to be major stressors, especially in Asian countries,^[4] as their academic performance at this stage plays a decisive role in higher education and career.^[5] Various studies carried out after the year 2000 revealed that the prevalence of stress among Indian adolescents varied between 13% and 45%.^[6] Another study conducted in Thiruvananthapuram, India revealed that 93%–100% of school children had medium to moderate stress while 1.9%

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Departments of
Psychiatric Nursing,

¹Psychiatry and ³Clinical
Psychology, Dharwad
Institute of Mental Health
and Neurosciences,

²Manoshanti Child
Guidance Clinic,

⁴Department of Psychiatric
Nursing, Shreya College
of Nursing, Dharwad,
Karnataka, India

Address for correspondence:

Dr. Sreevani Rentala,
Department of Psychiatric
Nursing, Dharwad
Institute of Mental Health
and Neurosciences,
Dharwad - 580 008,
Karnataka, India.
E-mail: [sreevani.phd@
gmail.com](mailto:sreevani.phd@gmail.com)

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exhibited severe stress.^[7] A study by Deb *et al.*, 2015, revealed that nearly two-thirds (63.5%) of the Indian students reported stress due to academic pressure.^[8] It is, therefore, worthwhile to undertake further research which would seek to protect the growing adolescent population.

Due to the ever expanding population in India, the education system has become highly competitive. As a result, the children begin to face the pressure of competition from the preprimary level itself in the form of year-end examinations which determine their promotion to the next higher grade. The academic stress further increases at the preuniversity level as getting admission to good colleges depends on their grades or marks obtained in the qualifying examination. In the Indian system of education, obtaining good marks are more important than acquiring knowledge. This leads to overburdening the students with academic workload causing a lot of academic stress among Indian adolescents.^[9]

Academic stress adversely affects student's personal, emotional, and physical well-being,^[10,11] as well as their learning and performance levels.^[12,13] Various studies highlighted the relationship between educational stress and internalizing and externalizing problems in school contexts.^[14,15] Adolescents who were undergoing high stress were found to be indulging in various maladaptive and risky behaviors such as increased consumption of alcohol and drugs, unprotected sexual activities, physical inactivity, poor eating, and sleeping patterns.^[16,17] Incidences of depression were also found among stressful adolescents.^[18] A study in the Indian context identified a significant relationship between educational stress and mental health conditions among adolescents.^[19] Although both boys and girls have the same level of worry regarding academics and economics, girls are much more vulnerable to increased stress when it comes to issues related to future events, classmates, and personal health.^[20] Adolescent girls are found to perceive negative interpersonal events as more stressful than boys.^[21] Studies revealed that adolescent girls experience more stress than boys.^[22] However, not many studies have been focused on adolescent girls. The present study intends to investigate this unexplored area.

It is generally believed that factors in the family, student, and school environment may influence stress.^[23] Association of psychiatric morbidity with sociodemographic variables has been less explored in previous literature.^[24] There is a gap in academic literature with regard to studies examining the association between demographic and psychosocial factors with academic stress among adolescents. The present study aims to fill this gap.

There are inconsistencies in literature related to the relationship between stress and personality traits among adolescent girls. Malik, 2015, found that there was no significant relationship between stress and personality traits among adolescent girls.^[25] A study by Nechita *et al.*, 2015, revealed that personality factors significantly influence stress levels.^[26] A study by Sachdeva revealed no significant relationship between physical stress, personality, and reasoning ability among adolescent girls.^[27] The present study has been undertaken to investigate the role of personality factors in academic stress.

Research on finding the determinants of academic stress may provide evidence for understanding the risk factors that influence academic stress. This knowledge could be used to guide the professionals such as teachers and psychologists in implementing specific preventive measures to reduce academic stress among adolescents. Based on these findings, preventive programs can be developed and conducted to promote mental health among adolescent girls.

The present study was conducted in the said background with an objective to assess academic stress and investigate the significant demographic, personality, and intelligence factors that could predict it among adolescent girls.

Subjects and Methods

Setting

A cross-sectional study was conducted in ten colleges involving adolescent girls pursuing Pre University and university studies at Dharwad city, Karnataka, India. These included both coeducational and women colleges with an average of 60–80 students in each class section. In coeducational institutions, the girls accounted for 40%–50% of class strength. Both government and private colleges were selected randomly.

Study participants

The study population included adolescent girls aged between 16 and 19 years studying in 11th and 12th classes and under graduation courses. Students were selected using random sampling technique. A total of 600 students were approached for the study, of which 80 students expressed their unwillingness to participate due to inconvenient timings. Of the remaining 520 adolescent girls who were initially screened using a stress subscale of depression, anxiety, and stress scale, 326 girls met the criteria of cutoff score above 14. Of these 326 students participated in the study, data pertaining to 314 students were included in the final analysis, whereas 12 students were discarded on account of incomplete filling of the questionnaires [Figure 1].

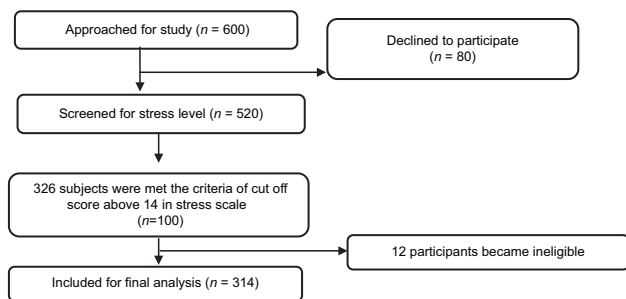


Figure 1: Flow chart showing the selection of the study sample

Tools

These include structured sociodemographic data sheet, personality inventory, intelligence quotient (IQ) assessment, and Educational Stress Scale for Adolescents (ESSA). Before the administration of questionnaires to study participants, the questionnaires were pretested in a similar setting for suitability and reviewed by experts for accuracy.

Description of tools

1. Sociodemographic information comprised basic information such as age in years, area of residence, type of religion, father and mother education and their occupation, family monthly income, number of siblings, and birth order. Educational variables comprised combination of subjects chosen, type of educational institution studying in, and number of homework hours. Psychological variables include type of personality and IQ assessment
2. Educational Stress Scale for Adolescents was developed by Sun, Dunne, Hou and Xu in 2011. It is a self-report instrument containing 16 items designed to measure educational stress on five components that include; study pressure (4 items), workload (3 items), and worry on grades (3 items), self-expectation (3 items), and dependency (3 items) rated on 5-point scale 1–5 (1 – strongly disagree to 5 – strongly agree) with a higher score indicating greater educational stress. Scores range from 16 to 80. The Cronbach's alpha for ESSA five subscales was 0.81, 0.74, 0.71, 0.66, and 0.75, respectively, indicating moderate to good internal consistency among East Asian adolescents^[28]
3. Eysenck Personality Inventory is a self-report group or individual measurement designed to measure two pervasive independent dimensions of personality, i.e. extraversion-introversion and neuroticism-stability. It consists of 57 items rated on 0–1 (0 – no and 1 – yes), of which 24 relate to extroversion, 24 to neuroticism, and 9 to lie scale. Test-retest reliabilities of the scale based on normal samples are 0.84 for neuroticism and 0.88 for extroversion^[29]
4. Raven's standard progressive matrices were developed by Raven in 1938 to measure intellectual ability. This scale consists of 60 problems divided into

five sets (A, B, C, D, and E) of 12 items each. Within each set, the items are arranged in the increasing order of difficulty. Each item contains a figure with a missing piece which the subjects are asked to fill. The five sets provide five progressive assessments of a person's capacity for intellectual activity. The raw score is converted to a percentile rank using the norms given in the manual.^[30]

Ethical considerations

Study was approved by Institutional Ethics Committee. The ethical considerations were addressed by explaining to the participants and their parents, the ethical rights both orally and in writing. Subsequent to the explanation of the purpose, risks, and benefits of the study, the participants and their parents gave their written consent.

Data collection

Data were collected between January 2018 and June 2018. Self-administered questionnaires were administered after obtaining informed consent. The investigator briefed about the questionnaires and the mode of recording answers. Each participant took 40–45 min to complete the questionnaires. The investigators were available to clarify the doubts raised by the students while they were filling up the questionnaires.

Data analysis

Data were coded and analyzed using SPSS software (version 23), IBM, Newyork, USA. The outcome variable was educational stress among adolescent girls. Descriptive and inferential statistics were used to analyze the data. Chi-square or Fisher exact or Pearson's correlation tests were used to find the relationship of educational stress with demographic variables, educational variables, personality trait, and IQ level of adolescents. Backward regression analysis was performed to estimate the predictors. In this model, the variables having significant association were entered, and at each step, the variable with the least significance was discarded. This process was continued till only significant variables remained. The significance limit was set at $P < 0.05$.

Results

Tables 1-3 depict the distribution of the sociodemographic, educational, and psychological variables pertaining to the study sample. Mean age of the sample was 18.01% ± 0.9 . 65% were residing in rural areas, 79.6% belonged to Hindu religion, 69.4% to nuclear family, 36% had one sibling, 41.7% were first born in the family, 72.3% were pursuing science combination, 78.3% were studying in private institutions, 39.2% had moderate stress, 60.2% had average IQ level, and 51.3% exhibited ambivert and neuroticism personality. Fathers and mothers of

Table 1: Description of demographic variables among adolescent girls (n=314)

Demographic variables	Categories	Frequency (%)
Area of residence	Rural	204 (65.0)
	Urban	110 (35.0)
Type of religion	Hindu	250 (79.6)
	Muslim	44 (14.0)
	Christian	20 (6.4)
Father education	Illiterate	85 (27.1)
	Up to 10 th and PUC	174 (55.4)
	Graduate and above	55 (17.5)
Mother education	Illiterate	125 (39.8)
	Up to 10 th and PUC	167 (53.2)
	Graduate and above	22 (7.0)
Father occupation	Unemployed	17 (5.4)
	Manual worker	59 (18.8)
	Self-employed	55 (17.5)
	Farmer	183 (58.3)
Mother occupation	Housewife	127 (40.4)
	Manual worker	60 (19.1)
	Self-employed	28 (8.9)
	Farmer	99 (31.5)
Type of family	Joint	93 (29.6)
	Nuclear	218 (69.4)
	Extended	3 (1.0)
Number of siblings	1	113 (36.0)
	2	101 (32.2)
	>2	100 (31.8)
Birth order	First child	131 (41.7)
	Middle child	120 (38.2)
	Last child	63 (20.1)
Variables		Mean±SD
Age (years)		18.01±0.9
Family monthly income		12337.58±6239.6

SD=Standard deviation

Table 2: Description of educational variables among adolescent girls (n=314)

Demographic variables	Categories	Frequency (%)
Combination of subjects	Science combination	227 (72.3)
	Commerce combination	36 (11.5)
	Arts combination	51 (16.2)
Types of educational institution	Government	68 (21.7)
	Private	246 (78.3)
Number of homework hours (mean±SD)		2.53±1.2

SD=Standard deviation

a maximum number of adolescents (55.4%–53.2%) were educated to below graduation level. More than half (58.3%) of the adolescents’ fathers were farmers and 40.4% mothers were housewives. Mean family monthly income was 12,337.58 ± 6239.6, mean IQ percentile was 47.04 ± 6.47, and educational stress was 50.04 ± 10.82.

Results of the relationship between educational stress and demographic variables, educational variables, level of IQ, and personality traits are presented in Tables 4-6, respectively. It showed a significant association between

educational stress and religion, father education, number of siblings, combination of subjects, type of personality, and IQ.

Backward regression analysis was run using educational stress as the dependent variable. Age, religion, father education, mother education, income, number of siblings, combination of subjects in preuniversity course and personality type were included as predictors by creating appropriately dummy variables [Table 7]. Number of siblings (beta = -0.115; P = 0.037) and extrovert and neuroticism personality type (beta = -0.242; P = 0.001) negatively predicted the educational stress and were considered to be positive variables. These positive variables are a protective factor to educational stress. Introvert and neuroticism (beta = 0.160; P = 0.026), Hindu religion (beta = 0.119; P = 0.028), illiterate father (beta = 0.125; P = 0.017), and commerce subject combination (beta = 0.278; P < 0.001) positively predicted the educational stress and were considered to be negative variables mainly associated with the risk to educational stress among adolescent girls.

Discussion

In the present study, an attempt has been made in an explorative manner to identify predictors of educational stress among preuniversity and undergraduate students. Most variables examined had a statistically significant relationship with educational stress scores.

In the present study, adolescent girls with illiterate father exhibited higher stress compared to those with literate father and positively predicted educational stress (beta = 0.125; P = 0.017). This result was similar to the results stated by Finkelstein *et al.*, 2007, who revealed that adolescents from families with lower parent education are less optimistic than those from more educated families. This pessimism may be a cause for increased stress among adolescents.^[31]

In the present study, the number of siblings negatively predicted (beta = -0.115; P = 0.037) the educational stress. Previous literature has shown that adolescents with more siblings displayed higher levels of self-confidence when compared to those with lesser number of siblings.^[32] In this study, adolescent girls with introvert neuroticism traits positively predicted (beta = 0.160; P = 0.026) educational stress while those with extrovert neuroticism negatively predicted (beta = -0.242; P = 0.001). In most previous studies too neuroticism has predicted the generation of stressful life events and academic performance.^[33-35] Neuroticism personalities have a tendency to experience unpleasant or negative emotions which could be a stress predictor.^[36] In many studies,

Table 3: Description of Psychological variables among adolescent girls (n=314)

Psychological variables	Categories	Frequency (%)
Type of personality	Extrovert and neuroticism	22 (7.0)
	Introvert and neuroticism	52 (16.6)
	Ambivert and neuroticism	161 (51.3)
	Extrovert and emotionally well-being	8 (2.5)
	Rejected data	20 (6.4)
	Ambivert and emotionally well-being	7 (2.2)
	Ambivert and mentally well-being	44 (14.0)
IQ percentile (mean±SD) 47.04±6.47		
Educational stress (mean±SD) 50.04±10.82		
SD=Standard deviation, IQ=Intelligence quotient		

neuroticism is negatively correlated and a predictor of academic performance.^[35]

In this study, Hindu religion and commerce subject combination positively predicted educational stress among adolescent girls. There are no supporting studies for these variables; further studies should take these variables into consideration for future research.

These findings provide an important input for mental health practitioners in designing effective stress management interventions and workshops for managing stress among adolescent girls. There are a few

Table 4: Association between educational stress with demographic and educational variables among adolescent girls

Demographic variables	Educational stress, frequency (%)			P
	Normal - mild	Moderate	Extremely severe	
Area of residence				
Rural	47 (23.0)	78 (38.2)	79 (38.7)	0.84
Urban	26 (23.6)	45 (40.9)	39 (35.5)	
Type of religion				
Hindu	51 (20.4)	97 (38.8)	102 (40.8)	0.03*
Muslim	17 (38.6)	15 (34.1)	12 (27.3)	
Christian	5 (25.0)	11 (55.0)	4 (20.0)	
Father education				
Illiterate	12 (14.1)	31 (36.5)	42 (49.4)	0.02*
Up to 10 th and PUC	45 (25.9)	75 (43.1)	54 (31.0)	
Graduate and above	16 (29.1)	17 (30.9)	22 (40.0)	
Mother education				
Illiterate	21 (16.8)	47 (37.6)	57 (45.6)	0.07
Up to 10 th and PUC	47 (28.1)	65 (38.9)	55 (32.9)	
Graduate and above	5 (22.7)	11 (50.0)	6 (27.3)	
Father occupation				
Unemployed	5 (29.4)	5 (29.4)	7 (41.2)	0.42
Manual worker	14 (23.7)	17 (28.8)	28 (47.5)	
Self-employed	15 (27.3)	21 (38.2)	19 (34.5)	
Farmer	39 (21.3)	80 (43.7)	64 (35.0)	
Mother occupation				
Unemployed	29 (22.8)	49 (38.6)	49 (38.6)	0.68
Manual worker	11 (18.3)	27 (45.0)	22 (36.7)	
Self-employed	10 (35.7)	8 (28.6)	10 (35.7)	
Farmer	23 (23.2)	39 (39.4)	37 (37.4)	
Type of family				
Joint	23 (24.7)	32 (34.4)	38 (40.9)	0.49
Nuclear	50 (22.9)	90 (41.3)	78 (35.8)	
Extended	0 (0.0)	1 (33.3)	2 (66.7)	
Number of siblings				
1	20 (17.7)	43 (38.1)	50 (44.2)	0.03*
2	21 (20.8)	38 (37.6)	42 (41.6)	
>2	32 (32.0)	42 (42.0)	26 (26.0)	
Birth order				
First child	25 (19.1)	55 (42.0)	51 (38.9)	0.67
Middle child	32 (26.7)	45 (37.5)	43 (35.8)	
Last child	16 (25.4)	23 (36.5)	24 (38.1)	
Combination of subjects				

Contd...

Table 4: Contd...

Demographic variables	Educational stress, frequency (%)			P
	Normal - mild	Moderate	Extremely severe	
Science combination	53 (23.3)	92 (40.5)	82 (36.1)	0.001***
Commerce combination	3 (8.3)	9 (25.0)	24 (66.7)	
Arts combination	17 (33.3)	22 (43.1)	12 (23.5)	
Type educational institution				0.41
Government	13 (19.1)	25 (36.8)	30 (44.1)	
Private	60 (24.4)	98 (39.8)	88 (35.8)	

P=*0.05, **0.01, ***0.001

Table 5: Association between educational stress and psychological variables among adolescent girls

Demographic variables	Educational stress, frequency (%)			P
	Normal - mild	Moderate	Extremely severe	
Personality				0.001***
Extrovert and neuroticism	4 (18.2)	10 (45.5)	8 (36.4)	
Introvert and neuroticism	6 (11.5)	22 (42.3)	24 (46.2)	
Ambivert and neuroticism	37 (23.0)	57 (35.4)	67 (41.6)	
Extrovert and emotionally well-being	4 (50.0)	3 (37.5)	1 (12.5)	
Rejected data	3 (15.0)	7 (35.0)	10 (50.0)	
Ambivert and emotionally well-being	5 (71.4)	0 (0.0)	2 (28.6)	
Ambivert and mentally well-being	14 (31.8)	24 (54.5)	6 (13.6)	

***P=0.001

Table 6: Correlation between educational stress and demographic, educational, and psychological variables among adolescent girls

Demographic variables	r	P
Age	-0.032	0.577
Family monthly income	-0.052	0.359
Number of homework hours	0.032	0.567
IQ percentile	-0.165	0.003**

**P=0.01. IQ=Intelligence quotient

Table 7: Results of backward regression analysis using educational stress as a dependent variable

Variables	B	SE	β	t	P
Siblings	-1.473	0.704	-0.115	-2.094	0.037*
Extrovert and neuroticism	-2.788	0.831	-0.242	-3.354	0.001***
Introvert and neuroticism	1.502	0.672	0.160	2.236	0.026*
Hindu	3.106	1.404	0.119	2.213	0.028*
Illiterate-father	2.962	1.235	0.125	2.399	0.017*
Commerce	4.583	1.068	0.278	4.292	0.000***

P=*0.05, **0.01, ***0.001. SE=Standard error

limitations in the present study which must be taken into consideration while interpreting the results.

Limitations

The study is limited by a small sample size resulting in low statistical power. The sample used in this study is homogeneous in terms of gender which limits the ability to generalize the results. The current findings are solely based on self-reported questionnaires thus limiting the total elimination of reporting bias. Some students may be reluctant to report an excessive amount of stress experienced by them. This

cross-sectional design investigated associations rather than causality.

Conclusions

Most undergraduate and graduate adolescents girls included in this study were found to be experiencing educational stress. The level of educational stress experienced by students was dependent on the personality type, father education, combination of subjects chosen during preuniversity, and number of siblings. Thus, these factors can be considered while identifying stress among adolescent girls and develop suitable stress prevention interventions. Teachers, parents, and other primary caregivers should be aware of these stress causing factors. Introduction of stress management programs at school level will be more helpful.

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Conflicts of interest

There are no conflicts of interest.

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