



STRESS AND ITS EFFECTS AMONG 12TH SCIENCE STUDENTS PREPARING FOR COMPETITIVE EXAMINATIONS: A CROSS-SECTIONAL STUDY

Health Science (Nursing)

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ABSTRACT

Background: Competitive examinations place considerable academic pressure on higher secondary science students, affecting their physical and emotional well-being. This study assessed stress levels and their effects among 12th-grade science students while promoting stress awareness through educational pamphlets. **Methods:** A quantitative cross-sectional study was conducted among 200 students selected by simple random sampling. Data were collected using a Likert scale to assess stress levels and a dichotomous scale to evaluate stress effects. Informed consent was obtained from all participants. **Results:** Of the participants, 69% had moderate stress, 27.5% mild stress, and 3.5% severe stress. Mild stress effects were reported by 76.5% of students, while 23.5% experienced moderate effects. Higher stress was observed among 17-year-old students, urban residents, and those from moderate- to low-income families. Stress showed a positive correlation with its effects and was significantly associated with gender, mother's education, and residential background. **Conclusion:** Early stress identification and effective management strategies are essential to improve students' well-being, coping skills, and academic performance.

KEYWORDS

Academic Stress, Effects of Stress, Higher Secondary Students, Competitive Examinations, Stress Management.

INTRODUCTION

Stress is a psychological and physiological response to demands that exceed an individual's coping capacity. Higher secondary science students preparing for competitive examinations are particularly vulnerable to academic stress due to extensive syllabi, high parental expectations, career concerns, and fear of failure. Unmanaged stress may adversely affect students' emotional, physical, and academic well-being, resulting in anxiety, fatigue, sleep disturbances, poor concentration, and reduced academic performance. According to Lazarus and Folkman's Stress and Coping Theory, the impact of stress depends on an individual's perception and coping abilities. Educational institutions can play a vital role in promoting effective stress-management strategies to improve students' resilience and well-being. Therefore, this study aimed to assess stress levels and their effects among higher secondary science students preparing for competitive examinations, examine the correlation between stress and its effects, determine their association with selected demographic variables, and promote stress awareness through the distribution of educational pamphlets.

METHODS

A quantitative research approach employing a non-experimental, descriptive, cross-sectional design was adopted to assess the level of stress and its effects among 12th-grade science students in selected higher secondary schools in Nadiad city. The study was conducted after obtaining approval from the Institutional Ethics Committee and permission from the relevant school authorities.

The target population consisted of students enrolled in the 12th-grade science stream. A total of 200 students, aged between 16 and 19 years,

were selected using a simple random sampling technique. Students who were willing to participate and available during the data collection period were included in the study, while those unwilling to participate were excluded. Prior to data collection, the investigator explained the objectives and purpose of the study to the participants. Written informed consent was obtained from all participants to ensure voluntary participation and confidentiality of their information.

The data collection tool comprised three sections. The first section included demographic variables such as age, gender, residential background, parental education, and family income. The second section featured a Likert scale designed to assess students' stress levels. This scale used frequency-based responses, with scores ranging from a minimum of 10 to a maximum of 50. Stress levels were categorized based on percentage scores as follows: less than 40% indicated mild stress, 41–79% indicated moderate stress, and more than 80% indicated severe stress.

The third section consisted of a dichotomous scale used to assess the effects of stress among students. The minimum possible score was zero, and the maximum score was 20. Scores below 50% indicated mild effects, scores between 50% and 80% indicated moderate effects, and scores above 80% indicated severe effects of stress.

The collected data were organized, tabulated, and analyzed using descriptive and inferential statistics. Frequency and percentage distributions were employed to describe the demographic variables and stress levels among the participants.

Ethical Considerations

The study was approved by the Institutional Ethical Committee (IEC) of Dinsha Patel College of Nursing, Maganbhai Adenwala Mahagujarat University, Nadiad. The committee comprises a total of 15 members from various departments. The Ethical Approval Reference number is MAM Uni/IECHR/2024/50. Formal written consent was obtained from the participants prior to data collection.

RESULTS:

Objective 1: To assess the level of stress among higher secondary (12th grade science) students preparing for competitive examinations.

Table 1: Frequency and Percentage Distribution of 12th Grade Science Students by Level of Stress Related to Competitive Examinations (N=200)

Level of Stress	Frequency (f)	Percentage (%)
Mild Stress	55	27.5%
Moderate Stress	138	69%
Severe Stress	7	3.5%
Total	200	100%

The table above illustrates the distribution of students based on their stress levels related to competitive examinations. Among 200 students, the majority—138 (69%)—experienced moderate stress, followed by 55 (27.5%) who had mild stress, and 7 (3.5%) who experienced severe stress. This indicates that higher secondary students preparing for competitive examinations predominantly experience moderate stress.

Objective 2: To identify the effects on the academic performance and daily life of these students.

Table 2: Frequency and Percentage Distribution of Students According to the Effects of Stress Related to Competitive Examinations (N=200)

Effects of Stress	Frequency (f)	Percentage (%)
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Table 4: Association Between Selected Demographic Variables and Stress Levels Among Students (n = 200)

Demographic Variable	Category	Mild Stress	Moderate Stress	Severe Stress	χ^2	df	p-value	Remarks
Age of Student	16 years	16	57	0	7.506	4	0.111	NS
	17 years	27	57	4				
	18 years	12	24	3				
Gender	Male	41	65	0	20.071	2	0	S
	Female	14	73	7				
Religion	Hindu	45	123	6	5.839	6	0.441	NS
	Muslim	10	11	1				
	Christian	0	3	0				
	Other	0	1	0				
Educational Status of Father	Primary education	6	9	0	7.035	4	0.134	NS
	Secondary education	12	19	3				
	Higher secondary and above	37	110	4				
Educational Status of Mother	Illiterate	6	4	0	14.727	6	0.022	S
	Primary education	11	23	4				
	Secondary education	14	32	2				
	Higher secondary and above	24	79	1				
Educational Status of Sibling	Illiterate	0	2	0	5.183	8	0.738	NS
	Primary education	11	38	2				
	Secondary education	13	31	3				
	Higher secondary and above	22	41	1				
	No siblings	9	26	1				
Type of Family	Nuclear	20	55	2	3.036	6	0.804	NS
	Joint	33	72	4				
	Single parent	2	9	1				
	Other	0	2	0				
Family Income	Less than 10000	6	13	1	1.002	4	0.909	NS
	10000–15000	24	67	4				
	More than 15000	25	58	2				
Residential Status	Rural	18	49	4	9.464	4	0.05	S
	Urban	34	89	3				
	Hostel	3	0	0				

The chi-square test was used to examine the association between stress levels and selected demographic variables among 12th-grade science students. The results revealed that gender ($\chi^2 = 20.071$, $p < 0.001$), mother's educational status ($\chi^2 = 14.727$, $p = 0.022$), and residential status ($\chi^2 = 9.464$, $p = 0.050$) were

Mild Effect	153	76.5%
Moderate Effect	47	23.5%
Total	200	100%

The table above illustrates the distribution of students according to the effects of stress related to competitive examinations. The findings reveal that 153 students (76.5%) experienced mild effects of stress, while 47 students (23.5%) experienced moderate effects of stress. These results indicate that although a significant proportion of students reported stress, most experienced only mild effects on their daily lives and academic performance.

Objective 3: To determine the correlation between stress levels and their effects among higher secondary students preparing for competitive examinations.

Table 3: Correlation Between Stress Levels and Effects of Stress Among 12th Grade Science Students Preparing for Competitive Examinations (N = 200)

Variables	Mean	Std. Deviation	r- Value	p-value
Stress Level	24.45	7.08	0.592**	0.000
Effect of Stress	6.63	3.47		

**Correlation is significant at the 0.01 level (2-tailed).

Table 4.5 presents the correlation between stress levels and the effects of stress among 12th-grade science students preparing for competitive examinations. The analysis reveals that the Pearson correlation coefficient between stress level and the effects of stress is $r = 0.592$, indicating a moderate positive correlation between the two variables.

The p-value (0.000) is less than the significance level ($p < 0.01$), indicating that the relationship is statistically significant.

Objective 4: To determine the association between stress levels and selected demographic variables.

Objective 5: To determine the association between the effects of stress and selected demographic variables.

significantly associated with stress levels at the 0.05 level of significance.

Table 5: Association Between the Effect of Stress and Selected Demographic Variables Among 12th Grade Science Students (N = 200)

Demographic Variable	Category	Mild Effect	Moderate Effect	χ^2	Df	p-value	Remarks
Age of Student	16 years	58	15	1.529	2	0.465	NS

	17 years	68	20				
	18 years	27	12				
Gender	Male	97	9	28.26	1	0	S
	Female	56	38				
Religion	Hindu	134	40	2.101	3	0.552	NS
	Muslim	15	7				
	Christian	3	0				
	Other	1	0				
Educational Status of Father	Primary education	11	4	0.254	2	0.881	NS
	Secondary education	27	7				
	Higher secondary and above	115	36				
Educational Status of Mother	Illiterate	9	1	3.77	3	0.287	NS
	Primary education	26	12				
	Secondary education	40	8				
	Higher secondary and above	78	26				
Educational Status of Sibling	Illiterate	1	1	2.246	4	0.691	NS
	Primary education	40	11				
	Secondary education	36	11				
	Higher secondary and above	51	13				
	No siblings	25	11				
Type of Family	Nuclear	58	19	0.708	3	0.871	NS
	Joint	84	25				
	Single parent	9	3				
	Other	2	0				
Family Income	Less than 10000	13	7	5.935	2	0.051	NS
	10000–15000	68	27				
	More than 15000	72	13				
Residential Status	Rural	55	16	1.044	2	0.593	NS
	Urban	95	31				
	Hostel	3	0				

The chi-square test was used to determine the association between the effect of stress and selected demographic variables among 12th-grade science students. The findings revealed that gender had a statistically significant association with the effect of stress ($\chi^2 = 28.262$, $p < 0.001$).

However, age, religion, educational status of the father, educational status of the mother, educational status of siblings, family type, family income, and residential status did not show a statistically significant association with the effects of stress.

DISCUSSION

The present study was conducted to assess the level of stress and its effects related to competitive examinations among 12th grade Science students in selected schools of Nadiad city. The findings of the study revealed that a considerable number of students experienced moderate to high levels of stress associated with academic burden, competitive examinations, parental expectations, and fear of failure. The stress experienced by students also affected their physical, psychological, emotional, and social wellbeing.

The findings of the present study are consistent with the study conducted by Ajay Kumar Chaudhary, which reported that Science stream students experience greater academic stress due to extensive syllabus, frequent examinations, and pressure to secure admission in professional courses. The study highlighted that excessive academic expectations negatively affect concentration, sleep patterns, and emotional stability among adolescents. Similarly, the present study identified examination pressure and academic competition as major stressors among higher secondary students.

Another recent study by Pascoe et al. (2020) reported that chronic academic stress among adolescents is strongly associated with depression, anxiety, sleep disturbances, and poor academic outcomes. The authors emphasized that persistent stress without adequate emotional support may adversely affect students' mental health and quality of life. These findings are similar to the present study, where students demonstrated emotional and behavioural changes associated with examination stress.

The present study emphasizes the significant role of nurses, teachers, and parents in identifying stress-related problems among students at an early stage. School health nurses can provide counselling, stress management education, relaxation techniques, and regular mental health screening programs for students. In addition, awareness programs for parents and teachers regarding healthy academic expectations and emotional support may help in reducing stress levels

and improving students' mental wellbeing and academic performance.

CONCLUSION

The present study concluded that 12th-grade science students experience significant stress related to competitive examinations and academic performance. Major contributing factors include an extensive syllabus, fear of failure, parental expectations, and pressure to achieve higher academic success. The study also revealed that stress negatively affects students' emotional, psychological, physical, and social well-being, leading to issues such as anxiety, disturbed sleep, lack of concentration, irritability, and social withdrawal.

The findings underscore the urgent need for early identification and effective management of stress among adolescents. Supportive interventions—such as counseling services, stress management education, relaxation techniques, recreational activities, and regular mental health screenings—should be implemented in schools. Nurses, teachers, and parents play a vital role in providing emotional support and promoting healthy coping strategies among students. Appropriate guidance and supportive educational environments can help students reduce stress, improve mental well-being, and enhance academic performance.

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Conflict of Interest:

The authors declare that they have no conflict of interest.

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