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Original Article

Perceived Stress Prevalence and Demographic Associations Among Undergraduate Students in Erode District, Tamil Nadu: A Cross-Sectional Study

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Abstract

Introduction: An human may experience stress when they are unable to effectively manage past, present, and future circumstances. The elevated degree of stress experienced by Undergraduate students can be attributed to their requirement to acquire a wide range of proficiencies, including theoretical knowledge, clinical competencies, and interpersonal skills. This study aimed to determine the prevalence of perceived stress among undergraduate college students in the Erode area. **Methods:** An observational study was carried out among students ranging from their first year to final year in a district of Erode, spanning from May 2023 to August 2023. The study involved 291 participants, with a mean age of 20.00 ± 1.51 years, with 27.15% medical, 31.62% nursing, 23.02% physiotherapy, 18.21% art & science, and 53.26% first and second-year students. The convenience sampling method was employed. Data collection was conducted subsequent to obtaining ethical approval from the institutional review committee. The data collection was conducted through the utilisation of a self-administered questionnaire known as the Perceived Stress Scale (PSS). The data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 20 software. 95% confidence interval estimate A confidence interval was computed for binary data, along with the frequency and proportion. **Results:** 31.97% of the students reported a low level of stress, 49.83% reported a moderate level of stress, and 18.21% reported a high level of stress. younger

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students (18–19 years) reporting lower stress compared to older ones (20–23 years) ($\chi2 = 20.10$, $p = 0.001$). Faculty ($\chi2=45.04$, $p=0.001$), year of study ($\chi2=27.50$, $p=0.001$), and type of college ($\chi2=35.60$, $p=0.001$) also exhibit significant associations with stress levels, indicating differences in stress perception among students based on their academic and institutional backgrounds.) Students from lower-income households experience higher stress levels ($\chi2 = 34.73$, $p = 0.001$, with those with a monthly family income of less than Rs. 1,000 per month reporting the highest levels. During stress, students' habit of consuming pre-packaged, processed, or fast food shows a significant association ($\chi2 = 14.19$, $p = 0.001$). **Conclusions:** Undergraduate students commonly experience a significant issue of high perceived stress. Female students and healthcare students are more susceptible to higher risks. There is a correlation between high levels of stress and poor academic achievement, excessive consumption of pre-processed food, and a perception of insufficient family finances.

Keywords: Perceived Stress, Undergraduate students, Demographic, Perceived Stress Scale, Low family income,

Introduction:

Stress is a condition that arises when there is a mismatch between our requirements and our ability to meet them, as well as the resources and expectations placed on us by our surroundings.The user's text is [1]. Many students experience stress during their time at university. The cause could be attributed to exposure to diverse stimuli. These factors encompass being apart from family support, having high personal expectations, feeling time pressure, experiencing academic overload, facing examinations and competitions, striving to attain educational goals despite financial limits, and lacking leisure time activities. The user's text is [2].

The prevalence rate of high felt stress among college students varies significantly between different courses, primarily due to variations in the intensity of stressors present in the college environment, variances in measurement instruments, and variations in the colleges being studied.The given text is a list containing the elements[3-4]. Students enrolled in health care colleges may face a higher susceptibility to stress compared to their counterparts at other universities. This could be attributed to being exposed to an increased burden of academic, social, and financial difficulties.The given text is a list containing the elements[5-6].

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An optimal degree of stress can serve as a catalyst for increased productivity and optimal performance. Nevertheless, an elevated amount that surpasses an individual's capacity to manage could be detrimental. It has the potential to adversely affect both physical and psychological health.The given text is the list [7]. Stress among university students can also be linked to hazardous habits, such as smoking and substance addiction.The user's text is[8]. Moreover, it is associated with poor academic performance. The user's text is [9].

Prior research suggests that stress was a primary determinant of sleep quality [10]. Stress is a typical response to the demands of daily life, and an excessive amount of stress can have multiple harmful impacts on both physical and mental well-being. The 2019 poll conducted by the American Psychological Association revealed that over 75% of respondents experienced symptoms of stress [11]. Stress is a prevalent issue among college students [12] due to several factors such as academic setbacks, parental pressure, and changes in social relationships during this critical phase of transitioning from adolescent to early adulthood [13]. Stress can impact the structure of neuroplasticity, including the release of endocannabinoids and brain-derived neurotrophic factor (BDNF). This might potentially result in improved sleep and relief from insomnia, but it can also contribute to sleep deprivation. Studies have shown that stress can have an influence on sleep patterns [14-16].

The aim of this study was to determine the prevalence of perceived stress among undergraduate students in the Erode District of Tamil Nadu, as well as identify the demographic factors related with it.

Methodology:

A cross-sectional survey was done among male and female undergraduate Medial, Nursing , Physiotherapy and Art and Science students in a district of Erode. The survey included students from their first year to final year, and it took place from May 2023 to August 2023. The sample size was determined using the Epi Info tool version 7.2. The computation was conducted using an estimated prevalence of high felt stress among university undergraduates at 33.8%,[3] a confidence level of 95%, and a desired margin of error of 3%. There were a total of 277 undergraduate students in the sample.

The study participants were chosen using the simple random selection technique. Within each college, students were randomly selected. The inclusion criterion consisted of students who were currently enrolled at the college and studying at the Erode district campus during the survey. The exclusion criteria encompassed individuals who expressed a lack of willingness to engage in the study.

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The participants were personally given a self-administered questionnaire through Google Form. The questionnaire consists of the following components: a) Personal data, such as age, sex, marital status, and family income; b) Academic data, which include academic level, name of college, course, and year of study; c) The Perceived Stress Scale (PSS).

Prior to data collection, formal authorizations were obtained from the relevant authorities of the targeted colleges to conduct the study in the specified location. The participants were informed about the study aims and assured of data anonymity and confidentiality. Voluntary participation was required for the study. The authors affirm that the study adhered to the ethical guidelines established by the appropriate national and institutional bodies on human research. The project was also authorized by the Institutional Ethical Committee. Participants provided informed consent. All unfinished questionnaires were discarded.

The data were inputted, verified, and analyzed using the Statistical Package for the Social Sciences (SPSS) version 22 software. The categorization of PSS into low, moderate, and high PSS was determined according to the methodology established by Cohen et al.[10]. The study utilized 95% confidence intervals (95% CIs) to determine the important components linked to stress in college students. The threshold for statistical significance was established at a p-value of less than 0.05.

Results:

In our study 291 Participants. The mean age of was 20.00 ± 1.51 years. 27.15% students are medical students and 31.62% are nursing students, 23.02% of the students are physiotherapy students and 18.21% are Art & science students. 53.26% are 1st and 2nd year students (table 1).

Table 1: DEMOGRAPHIC PROFILE

Demographic variables		Number of students	%
Age	18-19 years	111	38.14%
	20-21 years	128	43.99%
	22-23 years	52	17.87%
Birth order	Only child	35	12.03%
	Youngest	99	34.02%
	Middle	29	9.97%
	Eldest	128	43.99%
No. of Siblings	Nil	32	11.00%
	One	169	58.08%
	Two	72	24.74%
	Three	18	6.19%

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Religion	Hindu	234	80.41%
	Christian	38	13.06%
	Muslim	19	6.53%
Type of Family:	Nulear family	219	75.26%
	Joint family	62	21.31%
	Extended family	10	3.44%
Place of living:	Urban	87	29.90%
	Sub-urban	86	29.55%
	Rural	118	40.55%
Accommodation:	Home	251	86.25%
	Hostel	40	13.75%
Faculty:	Medial	79	27.15%
	Nursing	92	31.62%
	Physiotherapy	67	23.02%
	Arts & Science	53	18.21%
If you are studying, year of study	1st year	85	29.21%
	2nd year	70	24.05%
	3rd year	83	28.52%
	4th year	53	18.21%
Type of college	Co-Education	194	66.67%
	Only Girls	97	33.33%
Monthly family income	Less than Rs.1,000	22	7.56%
	Rs.1,000-2,499	16	5.50%
	Rs.2,500-4,999	14	4.81%
	Rs.5,000-9,999	22	7.56%
	Rs.10,000-19,999	71	24.40%
	Rs.20,000-49,999	79	27.15%
	More than Rs.50,000	67	23.02%

Table 1 presents a detailed demographic profile of students encompassing various factors. Age distribution reveals a predominant presence of students aged 18-21 years, with 38.14% falling in the 18-19 age group and 43.99% in the 20-21 age group. Birth order analysis indicates a significant portion as eldest siblings (43.99%), followed closely by the youngest (34.02%). In terms of siblings, most students have one sibling (58.08%), with a smaller proportion having two (24.74%) or three (6.19%) siblings. Religious affiliation leans towards Hinduism (80.41%), while 13.06% identify as Christian and 6.53% as Muslim. Family structure predominantly comprises nuclear families (75.26%), with lesser representation of joint (21.31%) and extended families (3.44%). Regarding residential location, the student body

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exhibits a varied distribution across urban (29.90%), suburban (29.55%), and rural (40.55%) areas. Accommodation preference tends towards residing at home (86.25%) over hostel accommodation (13.75%). Faculty distribution shows Nursing (31.62%) and Medical (27.15%) as the most represented disciplines, followed by Physiotherapy (23.02%) and Arts & Science (18.21%). Across different years of study, the student population is fairly balanced, with the highest proportion in the 2nd year (24.05%). Lastly, the majority of students attend co-education colleges (66.67%), with the remaining opting for girls-only colleges (33.33%). These demographic insights provide a comprehensive snapshot of the diverse student body across multiple dimensions.

Table 1 also outlines the family income, status of the surveyed students. Most families earn between Rs. 10,000 to Rs. 49,999 monthly, with a notable proportion exceeding Rs. 50,000.

Table 2: **DIET PATTERN**

		Number of students	%
Dietary habits	Vegetarian with Egg	20	6.87%
	Vegetarian without Egg	15	5.15%
	Mixed	256	87.97%
Habit of consuming pre-packaged / processed / fast food:	Yes	196	67.35%
	No	95	32.65%
Frequency of consumption of pre-packaged / processed / fast food:	1 day/week	201	69.07%
	2-3 day/week	52	17.87%
	4-7 day/week	38	13.06%
Pre-packaged / processed / fast food consumption	Yes	64	21.99%
	No	227	78.01%
Addiction to:	Tea	58	19.93%
	Coffee	58	19.93%
	Chocolate	94	32.30%
	Others	81	27.84%
Is addiction to Jung food	Yes	62	21.31%
	No	229	78.69%

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Table 2 outlines dietary habits, pre-packaged food consumption, and addictions among students. Most follow a mixed diet, with some adhering to vegetarianism. A significant portion consumes pre-packaged food weekly, with a minority reporting increased consumption during menstruation. Addictions include tea, coffee, chocolate, and others, with a few experiencing heightened cravings for junk food during stress.

Table 3: Each question wise Perceived Stress Score

	Perceived Stress Score									
	Never(0)		Almost never(1)		Sometimes(2)		Fairly often(3)		Very Often(4)	
Statements	n	%	n	%	n	%	n	%	n	%
1. In the last month, how often have you been upset because of something that happened unexpectedly?	81	27.84%	27	9.28%	88	30.24%	43	14.78%	52	17.87%
2. In the last month, how often have you felt that you were unable to control the important things in your life?	88	30.24%	59	20.27%	60	20.62%	39	13.40%	45	15.46%
3. In the last month, how often have you felt nervous and â€œstressedâ€• ?	68	23.37%	32	11.00%	91	31.27%	48	16.49%	52	17.87%
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	42	14.43%	38	13.06%	73	25.09%	87	29.90%	51	17.53%
5. In the last month, how often have you felt that things were going your way?	63	21.65%	59	20.27%	84	28.87%	46	15.81%	39	13.40%
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	75	25.77%	69	23.71%	82	28.18%	30	10.31%	35	12.03%

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7. In the last month, how often have you been able to control irritations in your life?	51	17.53%	44	15.12%	76	26.12%	68	23.37%	52	17.87%
8. In the last month, how often have you felt that you were on top of things?	104	35.74%	57	19.59%	87	29.90%	23	7.90%	20	6.87%
9. In the last month, how often have you been angered because of things that were outside of your control?	61	20.96%	45	15.46%	74	25.43%	55	18.90%	56	19.24%
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	100	34.36%	35	12.03%	74	25.43%	40	13.75%	42	14.43%

Table 3 presents the perceived stress scores for various statements among Medical, Nursing, Physiotherapy, and Arts and Science students. Each statement is rated on a scale from "Never" (0) to "Very Often" (4). Overall, the data illustrate the frequency of stress responses to different scenarios over the past month. Students commonly experience stress related to unexpected events, lack of control, nervousness, and difficulty coping with tasks. However, there are also instances where students feel confident, in control, and optimistic about their situations. The distribution of stress responses varies across disciplines, providing insights into the perceived stress levels among different student groups.

Table 4: Each question wise Mean Perceived Stress Score

statements	Maximum score	Mean	SD	% of mean sore
1. In the last month, how often have you been upset because of something that happened unexpectedly?	4	1.86	1.43	46.50%
2. In the last month, how often have you felt that you were unable to control the important things in your life?	4	1.64	1.43	41.00%
3. In the last month, how often have you felt nervous and â€œstressedâ€• ?	4	1.95	1.39	48.75%

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4. In the last month, how often have you felt confident about your ability to handle your personal problems?	4	2.23	1.29	55.75%
5. In the last month, how often have you felt that things were going your way?	4	1.79	1.31	44.75%
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	4	1.59	1.30	39.75%
7. In the last month, how often have you been able to control irritations in your life?	4	2.09	1.34	52.25%
8. In the last month, how often have you felt that you were on top of things?	4	1.31	1.23	32.75%
9. In the last month, how often have you been angered because of things that were outside of your control?	4	2.00	1.40	50.00%
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	4	1.62	1.44	40.50%
Total	80	18.06	9.53	45.15%

Table 4 provides the mean perceived stress scores for different statements among students, along with their standard deviations and the percentage of the mean score. The maximum score for each statement is 4, indicating the highest level of perceived stress. On average, students reported moderate levels of stress, with mean scores ranging from 1.31 to 2.23 out of 4. The highest mean score was for feeling confident about handling personal problems (2.23), while the lowest was for feeling on top of things (1.31). Overall, the total mean perceived stress score was 18.06 out of a maximum of 80, with a standard deviation of 9.53. This suggests that stress levels vary considerably among students, with around 45.15% of the maximum score being reported on average.

Table 5: LEVEL OF PEREIVED STRESS SCORE

Level of PSS	Number of students	%
Low	93	31.97%
Moderate	145	49.83%
High	53	18.21%
TOTAL	291	100.00%

Table 5 presents the distribution of perceived stress levels among students based on their Perceived Stress Scores (PSS). Out of 291 students surveyed, 31.97% exhibit low levels of stress, 49.83% experience moderate stress, and 18.21% report high stress levels. These levels are determined based on individual PSS scores, which can range from 0 to 40, with higher

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scores indicating greater perceived stress. Specifically, scores falling within 0-13 are classified as low stress, 14-26 as moderate stress, and 27-40 as high stress. The reliability coefficient of the 10-item self-report instrument used to assess perceived stress is reported to be r=0.85, indicating a high level of internal consistency.

Table 6: Association between level of PSS sore and Demographic variables

Demographic variables		Level of PSS score						n	Chi-square test
		Low		Moderate		High			
		n	%	n	%	n	%		
Age	18-19 years	28	25.23%	68	61.26%	15	13.51%	111	**$\chi2=20.10$ p=0.001*** (S)**
	20-21 years	54	42.19%	53	41.41%	21	16.41%	128	
	22-23 years	11	21.15%	24	46.15%	17	32.69%	52	
Birth order	Only child	11	31.43%	16	45.71%	8	22.86%	35	**$\chi2=13.15$ p=0.05* (S)**
	Youngest	30	30.30%	57	57.58%	12	12.12%	99	
	Middle	16	55.17%	8	27.59%	5	17.24%	29	
	Eldest	36	28.13%	64	50.00%	28	21.88%	128	
No. of Siblings	Nil	4	12.50%	19	59.38%	9	28.13%	32	**$\chi2=22.16$ p=0.001*** (S)**
	One	50	29.59%	96	56.80%	23	13.61%	169	
	Two	30	41.67%	23	31.94%	19	26.39%	72	
	Three	9	50.00%	7	38.89%	2	11.11%	18	
Religion	Hindu	79	33.76%	115	49.15%	40	17.09%	234	$\chi2=2.52$ p=0.64 (NS)
	Christian	9	23.68%	21	55.26%	8	21.05%	38	
	Muslim	5	26.32%	9	47.37%	5	26.32%	19	
Type of Family:	Nuclear family	77	35.16%	107	48.86%	35	15.98%	219	$\chi2=7.20$ p=0.12 (NS)
	Joint family	13	20.97%	32	51.61%	17	27.42%	62	
	Extended family	3	30.00%	6	60.00%	1	10.00%	10	
Place of living:	Urban	24	27.59%	46	52.87%	17	19.54%	87	$\chi2=2.12$ p=0.71 (NS)
	Sub-urban	28	32.56%	45	52.33%	13	15.12%	86	
	Rural	41	34.75%	54	45.76%	23	19.49%	118	
Accommodation:	Home	84	33.47%	122	48.61%	45	17.93%	251	$\chi2=1.93$ p=0.38 (NS)
	Hostel	9	22.50%	23	57.50%	8	20.00%	40	
Faculty:	Medial	13	16.46%	43	54.43%	23	29.11%	79	**$\chi2=45.04$ p=0.001*** (S)**
	Nursing	50	54.35%	37	40.22%	5	5.43%	92	
	Physiotherapy	21	31.34%	37	55.22%	9	13.43%	67	
	Arts&Science	9	16.98%	28	52.83%	16	30.19%	53	

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If you are studying, year of study	1st year	13	15.29%	57	67.06%	15	17.65%	85	**χ2=27.50 p=0.001*** (S)**
	2nd year	33	47.14%	27	38.57%	10	14.29%	70	
	3rd year	33	39.76%	38	45.78%	12	14.46%	83	
	4th year	14	26.42%	23	43.40%	16	30.19%	53	
Type of college	Co-Education	41	21.13%	106	54.64%	47	24.23%	194	**χ2=35.60 p=0.001*** (S)**
	Only Girls	52	53.61%	39	40.21%	6	6.19%	97	

Table 6 presents the association between demographic variables and perceived stress scores among students from Medical, Nursing, Physiotherapy, and Arts and Science disciplines. Significant associations are observed between perceived stress scores and several demographic factors. For instance, age shows a significant association ($\chi2=20.10$, $p=0.001$) with stress levels, with younger students (18-19 years) reporting lower stress compared to older ones (20-23 years). Similarly, birth order ($\chi2=13.15$, $p=0.05$) and the number of siblings ($\chi2=22.16$, $p=0.001$) demonstrate significant associations, with only children and students with fewer siblings reporting lower stress levels. Faculty ($\chi2=45.04$, $p=0.001$), year of study ($\chi2=27.50$, $p=0.001$), and type of college ($\chi2=35.60$, $p=0.001$) also exhibit significant associations with stress levels, indicating differences in stress perception among students based on their academic and institutional backgrounds. However, variables like religion, type of family, place of living, and accommodation do not show significant associations with perceived stress levels. These findings underscore the importance of considering demographic factors in understanding and addressing students' stress levels effectively.

Table 7: Association between level of PSS score and Monthly family income

		Level of PSS score						n	Chi-square test
		Low		Moderate		High			
Monthly family income		n	%	n	%	n	%		
Monthly family income Rs:	Less than 1,000	14	63.64%	8	36.36%	0	0.00%	22	**χ2=34.73 p=0.001*** (S)**
	Rs.1,000-2,499	7	43.75%	9	56.25%	0	0.00%	16	
	Rs.2,500-4,999	8	57.14%	5	35.71%	1	7.14%	14	
	Rs.5,000-9,999	7	31.82%	12	54.55%	3	13.64%	22	
	Rs.10,000-19,999	28	39.44%	32	45.07%	11	15.49%	71	
	Rs.20,000-49,999	18	22.78%	41	51.90%	20	25.32%	79	
	More than 50,000	11	16.42%	38	56.72%	18	26.87%	67	

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	Govt employee	15	50.00%	12	40.00%	3	10.00%	30	
	Own business	2	25.00%	4	50.00%	2	25.00%	8	
	Private employee	1	2.94%	25	73.53%	8	23.53%	34	
	Others	6	26.09%	14	60.87%	3	13.04%	23	

Table 7 highlights the association s monthly family income, vs PSS. The data reveal significant associations between these variables and perceived stress levels among students.Firstly, monthly family income demonstrates a significant association ($\chi2=34.73$, $p=0.001$) with stress levels, indicating that students from lower-income households experience higher stress levels. Notably, students from families earning less than Rs. 1,000 per month report the highest stress levels.

Overall, these findings underscore the impact of socioeconomic factors, particularly family income, on students' perceived stress levels. Addressing these disparities and providing support to students from disadvantaged backgrounds may be crucial in mitigating stress and promoting their well-being.

Table 8: Association between level of PSS score and Diet pattern

		Level of PSS score						n	Chi-square test
		Low		Moderate		High			
Diet pattern		n	%	n	%	n	%		
Dietary habits	Vegetarian with Egg	7	35.00%	12	60.00%	1	5.00%	20	$\chi2=3.76$ $p=0.24$ (NS)
	Vegetarian without Egg	3	20.00%	8	53.33%	4	26.67%	15	
	Mixed	83	32.42%	125	48.83%	48	18.75%	256	
Habit of consuming pre-packaged / processed / fast food:	Yes	49	25.00%	105	53.57%	42	21.43%	196	**$\chi2=14.19$ $p=0.001$*** (S)**
	No	44	46.32%	40	42.11%	11	11.58%	95	
	1 day/week	81	40.30%	94	46.77%	26	12.94%	201	

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Frequency of consumption of pre-packaged / processed / fast food:	2-3 day/week	7	13.46%	32	61.54%	13	25.00%	52	**χ2=27.58 p=0.001*** (S)**
	4-7 day/week	5	13.16%	19	50.00%	14	36.84%	38	
Pre-packaged / processed / fast food consumption increased during Menstruation	Yes	9	14.06%	34	53.13%	21	32.81%	64	**χ2=18.00 p=0.001*** (S)**
	No	84	37.00%	111	48.90%	32	14.10%	227	
Addiction to:	Tea	19	32.76%	33	56.90%	6	10.34%	58	**χ2=6.92 p=0.32 (S)**
	Coffee	20	34.48%	27	46.55%	11	18.97%	58	
	Chocolate	28	29.79%	42	44.68%	24	25.53%	94	
	Others	26	32.10%	43	53.09%	12	14.81%	81	
Is addiction increasing during Menstruation	Yes	6	9.68%	34	54.84%	22	35.48%	62	**χ2=25.54 p=0.001*** (S)**
	No	87	37.99%	111	48.47%	31	13.54%	229	

Table 8 explores the relationship between diet patterns and perceived stress scores (PSS) among students from various disciplines. The data highlight several significant associations between diet habits and stress levels.Firstly, the habit of consuming pre-packaged, processed, or fast food shows a significant association ($\chi2=14.19$, $p=0.001$) with stress levels, indicating that students who consume such foods are more likely to report moderate to high stress compared to those who do not.

Additionally, the frequency of consuming pre-packaged, processed, or fast food also exhibits a significant association ($\chi2=27.58$, $p=0.001$) with stress levels. Students who consume such foods more frequently, particularly 2-3 days/week and 4-7 days/week, are more likely to report higher stress levels.Moreover, pre-packaged, processed, or fast food consumption increasing during menstruation shows a significant association ($\chi2=18.00$, $p=0.001$) with stress levels, indicating that students who experience an increase in consumption during menstruation are more likely to report higher stress levels.However, the association between other dietary habits such as vegetarianism, addiction to tea, coffee, chocolate, or other substances, and stress levels are not statistically significant.

Overall, these findings suggest a noteworthy relationship between the consumption of pre-packaged, processed, or fast food and increased stress levels among students. Addressing

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dietary habits and promoting healthier eating practices may be beneficial in managing stress among students.

Table 9: Mean and standard deviation of PSS score

Mean	Median	Standard deviation	minimum	maximum
18.06	19.00	9.52	0	40

The mean perceived stress score (PSS) among the students is 18.06, with a median score of 19.00 and a standard deviation of 9.52. The scores range from 0 to 40, indicating considerable variability in perceived stress levels within the student population. This data suggests that while the average stress level falls below the midpoint of the possible range, there is a notable spread of scores, reflecting diverse experiences of stress among the students.

"Histogram showing linearity assumption". It appears to show the distribution of perceived stress scores among a group of 291 students . The histogram shows that the scores are clustered around the mean, with a standard deviation of 9.526. The x-axis shows the perceived stress score, ranging from -10 to 50. The y-axis shows the number of students.

It is important to note that a histogram is not the best way to assess linearity. A scatter plot is a more appropriate tool for this task.Linearity is one of the assumptions of linear regression. It means that the relationship between the independent and dependent variables is linear. In other words, if you plot the independent variable on the x-axis and the dependent variable on the y-axis, the points should fall in a straight line. If the relationship is not linear, then linear regression is not an appropriate statistical method to use.

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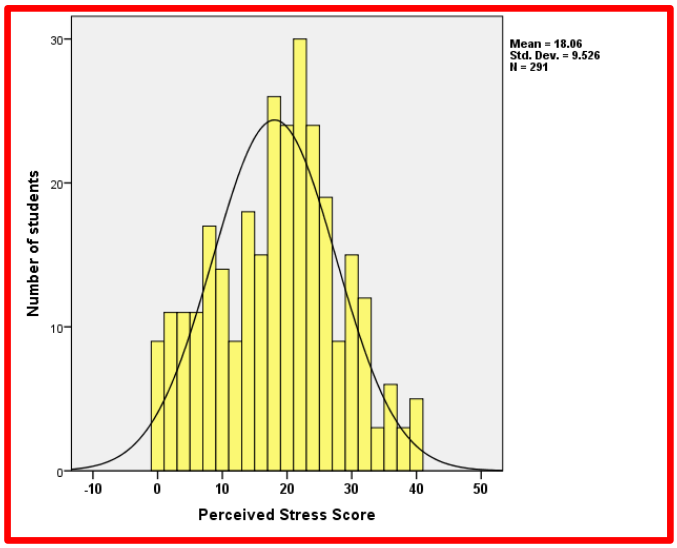

Figure 1 Histogram shows the distribution of perceived stress score among students.

Discussion:

The present study observed31.97% of the students reported a low level of stress, 49.83% reported a moderate level of stress, and 18.21% reported a high level of stress. The results of our study were consistent with the findings reported among university students in India (19.2),[17] Nigeria (19.6),[18] and Iran (20.04)[19]. The mean score was much lower compared to the scores reported in universities located in other parts of Saudi Arabia, such as Jeddah (28.5)[20] and Riyadh (27.0)[21]. It is significantly lower compared to the reported rate in Malaysia, which is 27.5.[22]. The vast range of stress levels may be attributed to variations in stress study design across different groups, as well as disparities in the intensity of personal, familial, academic, financial, and university environmental stresses.[22].

The association between higher perceived stress levels and students' perception of insufficient family income has been consistently found in various studies. Alsaleem et al. (2021) highlighted this relationship, indicating that students with lower family income levels tend to experience higher levels of perceived stress[23]. This observation is further supported by (Torun & Torun, 2020), who found that students with families having lower monthly incomes experienced increased anxiety and stress, particularly during the COVID-19 pandemic[24]. Additionally, Kêdoté et al. (2022) emphasized that insufficient income can lead to heightened stress due to the inability to meet basic needs, such as nutrition and housing, thereby contributing to overall stress levels[25].

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Furthermore, the impact of family income on stress levels extends beyond students. For instance, Phomprasith et al. (2022) noted a significant association between depression and perceived income insufficiency among medical students[26]. Similarly, parents' psychological impacts, including stress behaviors, were moderated by family income, with stronger associations observed in families with lower incomes (Kerr et al., 2021)[27].

These findings are in line with the broader literature on the relationship between income and stress. Mehta et al. (2020) demonstrated that lower income levels were associated with higher perceived stress levels and dysfunctional coping mechanisms. Moreover, families facing economic hardships may experience heightened stress due to financial constraints, impacting their ability to provide essential resources for their children[28].

Conclusion:

In conclusion, the consistent evidence from various studies supports the notion that there is a clear association between insufficient family income and increased perceived stress levels among students and families. These findings underscore the importance of addressing socioeconomic factors, such as income disparities, in efforts to mitigate stress and promote well-being among individuals and families.

Limitation:

This study has several constraints. Initially, the data were acquired by a self-administered questionnaire, which could potentially be influenced by recall bias. Confirming the direction of the association between stress and other associated characteristics, such as academic results, was challenging due to the cross-sectional nature of the study. Additionally, unassessed variables may influence the felt stress levels during the study, including other academic, social, economic, and cultural aspects.

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Conflicts of interest: There are no conflicts of interest.

Ethical statement:

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Institutional ethical committee accepted this study. The study was approved by the institutional human ethics committee, Government Erode Medical College, Perundurai, Erode. Informed written consent was obtained from all the study participants and only those participants willing to sign the informed consent were included in the study. The risks and benefits involved in the study and the voluntary nature of participation were explained to the participants before obtaining consent. The confidentiality of the study participants was maintained.

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Authors' contributions:

Dr.E.Krithiga - conceptualization, data curation, investigation, methodology, project administration, visualization, writing—original draft, writing—review and editing; ***Dr Dr.Sasikala Gunasekaran***-conceptualization, methodology, writing—original draft, writing—review and editing; ***Dr Panneerselvam Periasamy*** - methodology, writing—original draft, writing, review and editing. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work. All authors have read and agreed to the published version of the manuscript**.**

DATA AVAILABILITY:

All datasets generated or analyzed during this study are included in the manuscript.

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