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Exploring the link between eustress and adolescent health in India: An empirical study

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Abstract:

BACKGROUND: Modern psychological research challenges the conventional view of stress as solely detrimental by introducing the concept of eustress versus distress, emphasizing the potentially positive aspects of stress. In the context of India, limited studies have investigated the distinct effects of eustress and distress on adolescents, a group prone to stress-related health issues. This study aims to bridge this gap by examining the correlation between eustress and both mental and physical well-being among adolescents attending government schools in two districts of Haryana, India.

MATERIALS AND METHODS: A non-experimental quantitative research approach was adopted to achieve this objective. The study involved a sample of 400 adolescent students, equally split between genders, aged 15 to 18 years, enrolled in grades 10 to 12. Participants were selected through systematic random sampling from two districts in Haryana. The assessment tools employed in the study included the Post Graduate Institute Health Questionnaire and the Eustress Scale, which were utilized to evaluate the participants' mental, physical, and eustress levels.

RESULTS: In our study involving Indian adolescents, we discovered a substantial positive correlation ($r = 0.563$, $P < 0.01$) between eustress and mental health, underlining the valuable role of positive stress in enhancing psychological well-being. Notably, male participants exhibited significantly higher eustress scores (mean = 26.63) than their female counterparts (mean = 22.82, $P < 0.01$), indicating gender-specific variations in stress responses. Furthermore, our findings emphasized the influence of cultural nuances inherent to the Indian context on how adolescents perceived and experienced eustress. These outcomes emphasize the urgency of culturally sensitive interventions to promote adolescents' well-being.

CONCLUSION: This investigation contributes valuable insights into the nexus between eustress and adolescent health in the Indian context. The study accentuates the potential advantages of leveraging eustress to foster positive development by underlining the differential influence of eustress and distress on adolescent health. Future research endeavors and policy formulation could delve into the mechanisms underpinning eustress and distress, thus guiding strategies to enhance adolescents' health and overall well-being.

Keywords:

Adolescents, eustress, India, mental health, physical health

Introduction

Adolescence represents a critical period in human development characterized by many physical, environmental, and psychological changes. It can often be a trying phase for many individuals.^[1] Research

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has shown that during adolescence, the impact of stress on the brain is particularly pronounced, with potentially detrimental consequences.^[2] Recent studies support that stress can positively and negatively influence adolescent health. For example, Ref.^[3] found that stress's impact on depression in adolescents is complex, affecting various aspects of mental health.

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Their study noted that stress is associated with increased depressive symptoms and enhances resilience and positive self-concept. Ref.^[3] discovered that adolescents experiencing high levels of eustress tend to enjoy positive mental health outcomes, including increased life satisfaction and reduced depressive symptoms. These effects were mediated by resilience, implying that effective stress coping could amplify the positive impact of eustress.

Conversely, Ref.^[4] found that high-achieving adolescents facing significant stress levels were more susceptible to substance use disorders and behavioral issues. However, these same adolescents displayed resilience and coping skills that could mitigate the adverse effects of stress. They also shed light on factors such as gender, which play a pivotal role in determining how stress affects individuals, such as^[5] challenged previous research and theories^[6,7] by contradicting the role of gender in determining whether stress is perceived as eustress or distress. However, a recent study by Ref.^[8] showcased that college-going females encounter higher stress levels than their male counterparts, contrary to.^[5] This body of research highlights the intricate and multifaceted nature of the relationship between stress and adolescent health, revealing that various interconnected factors influence it, including cultural diversity and chosen age-group. Our primary aim emerged from this understanding.

Eustress has several advantages for physical and emotional well-being, enhancing individuals' abilities to manage stress and cope effectively.^[9] Some studies have suggested that stress can motivate healthy behaviors.^[10] Surprisingly, high stress levels have been linked to better academic performance among students.^[11] While research on the positive effects of stress has predominantly focused on adults, a limited body of work is exploring these effects in adolescents. Cross-sectional studies have revealed varying relationships between negative stress, life satisfaction, and good mental health among young individuals.

Conversely, longitudinal studies have shown that reduced distress on a given day is associated with greater happiness. Nevertheless, some cross-sectional studies involving young people from urban ethnic minorities have failed to establish a significant connection between distress and positive mental health. Similarly, Ref.^[12] discovered that the negative associations between distress and well-being were marginal and lacked clinical significance. Only a handful of studies have delved into the impact of positive stress on adolescents' psychological health, with most of them limited to college students aged 17–20 years. These studies have suggested a slight positive correlation between eustress and qualities such as vigor, dedication, and life satisfaction, although

Ref.^[13] found no such evidence. Thus, as a primary aim, this study has tried to encapsulate the effect of eustress, physical health, and mental health on adolescents and variations among genders. Previous research on stress in India has predominantly focused on the stress construct rather than eustress. This presents a gap in our understanding of the relationship between eustress and the mental and physical health of Indian adolescents. India boasts a unique sociocultural landscape with a vast and diverse youth demographic. With nearly 253 million adolescents aged 10–19 years, comprising over 20% of the country's total population,^[14] this cohort's well-being and developmental challenges hold significant implications for the nation's future. Furthermore, India's rapid socioeconomic changes, urbanization, and globalization have introduced novel stressors and opportunities for its adolescents, making it a crucial context for studying the interplay between developmental challenges and stress or eustress. By focusing on this demographic, we aim to contribute valuable insights that can inform targeted interventions and policies designed to support the well-being of Indian adolescents, thereby benefiting both this population and society at large.

Haryana is an ideal location for this study for several compelling reasons. Firstly, Haryana's socioeconomic dynamics, educational infrastructure, and healthcare services provide a unique context for examining the interplay between developmental challenges and stress or eustress among adolescents.^[15,16] Secondly, Haryana has undergone significant socioeconomic transformations in recent years, including rapid urbanization and industrialization, introducing new stressors and opportunities for its youth population. Lastly, by concentrating on Haryana, we intend to provide relevant insights to the state and offer valuable lessons applicable to similar contexts within India and other regions facing comparable developmental challenges. Adolescence is a stage in life characterized by significant gender-based disparities and distinct developmental paths. Gender shapes how adolescents experience and respond to developmental challenges and stressors. In our examination of the impact of gender, we aim to uncover potential variations in the experiences of stress and eustress among male and female adolescents in Haryana. This gender-focused analysis will contribute to a more comprehensive understanding of the dynamics at play and inform gender-sensitive interventions and policies designed to support the diverse needs of adolescents in Haryana, with potential applicability to similar regions. Stress is a significant contributor to adolescents' mental and physical health challenges. Historically, research has predominantly focused on the detrimental effects of stress, often resulting in adverse psychological, behavioral, and physical outcomes. This approach has led to various intervention programs to

reduce stress and promote overall well-being. However, contemporary research has begun to challenge this conventional perspective, shedding light on the potential positive aspects of stress. The emergence of positive psychology, a field centered on exploring human strengths and virtues, has notably introduced the concept of “eustress”—a form of positive stress—over the past two decades.^[17] In the context of this study, we adopt the definition of stress as an individual’s subjective response to challenging stimuli, commonly referred to as “stressors.” It is crucial to emphasize that eustress and distress are not opposing forces but rather distinct concepts that can coexist within an individual’s experience.

The foundational concepts of eustress and distress can be traced back to the pioneering work of Ref.,^[18] who categorized eustress as a constructive appraisal of the stress response and distress as a negative stress experience. Notably, the absence of distress does not negate the presence of eustress. Building upon these foundations, the Yerkes–Dodson curve law theory^[19] introduced the idea that moderate arousal, or eustress, can yield beneficial outcomes, while insufficient or excessive stimulation may lead to adverse effects. This model posits an inverted U-shaped curve to illustrate the relationship between stress and performance, suggesting that an optimal stress level (eustress) can enhance one’s abilities and motivation.

Additionally, Ref.^[20] provides a comprehensive framework for understanding stress. According to this model, individuals appraise stressors based on their perceived threat and the resources available for coping. This appraisal process influences the emotional and physiological responses to stress. The model emphasizes the dynamic nature of stress and the role of coping strategies in mitigating its impact.

Moreover, models such as the^[21] delineate how the body responds to stress, traversing alarm, resistance, and exhaustion stages. This physiological perspective complements the psychological dimensions elucidated by other models. Furthermore, the Biopsychosocial Model of Stress^[22] highlights the interplay of biological, psychological, and social factors in stress response. It underscores that stress is not solely a psychological phenomenon but also involves physiological and social dimensions.

In conclusion, existing research indicates that stress can have both positive and negative impacts on the health of adolescents, and the concept of eustress emerges as pivotal in fostering favorable outcomes. However, there is a need for further investigation to gain deeper insights into the interplay between eustress and adolescent health,

including potential moderating factors. Additionally, there is a scarcity of research focusing on potential gender disparities in the perception and experience of eustress, underscoring the need for more in-depth exploration in this domain. Continued exploration of stress’s affirmative dimensions can facilitate a more intricate grasp of its implications for adolescent health, ultimately guiding the development of more effective interventions and treatment protocols.

Given the nuanced insights regarding stress, its diverse dimensions, and the impact of gender disparities gleaned from the existing literature, this research embarks on an investigation into the correlation between eustress and the mental and physical well-being of Indian adolescents, with a particular focus on both male and female cohorts. The groundwork laid by previous scholarship underscores the importance of delving into eustress, the affirmative aspect of stress, within adolescent welfare. Hypothesis 1 asserts that eustress plays a central role in shaping adolescents’ psychological and physical well-being, aligning with the principles of the Yerkes–Dodson curve and Lazarus and Folkman’s Transactional Model of Stress and Coping. Furthermore, Hypothesis 2 explores the dimension of gender-based disparities in stress responses, recognizing the intricate interplay of sociocultural and biological factors. Hypothesis 2 aims to investigate gender-based disparities in stress responses among adolescents, taking into account the intricate interplay of sociocultural and biological factors. We predict that our study will reveal significant differences in stress responses between male and female adolescents. These hypotheses bring to the forefront questions that challenge established findings, including those by Ref.,^[6] who reported minimal gender-related distinctions in assessing eustress or distress. By scrutinizing the constructive facets of stress and disentangling potential gender variances, this study aims to enhance our comprehension of stress and its implications on the well-being of adolescents, thus contributing to a more holistic understanding of this pivotal developmental phase.

Materials and Methods

Study design and setting

The study used quantitative and descriptive approach to examine the relationship between eustress and the psychological well-being of adolescent students aged 15–18 years in the two districts of Haryana. A systematic random sampling method was used to draw participants’ data from six government schools from different socioeconomic backgrounds. The design followed the ethical considerations and got approval from relevant authorities.

Study participants and sampling

In compliance with ethical standards, this study obtained the necessary approvals from school principals and secured informed consent from the adolescent students before proceeding with any assessments. The research sample comprised 400 students aged between 15 and 18 years, with an average age of 16.5 years. The gender distribution was balanced, with 199 female and 201 male participants. The participants were selected through a random sampling method, drawn from six government schools in the Karnal and Kurukshetra districts in Haryana, India. These schools represented a diverse range of academic tracks, including arts, commerce, and non-medical streams. Notably, all participants came from rural backgrounds, encompassing various socioeconomic strata, from lower to middle class.

Data collection and technique

Before administering any assessments, the researcher meticulously established a rapport with the participants. This rapport-building phase also allowed participants to seek clarifications and express any concerns they might have had regarding their involvement. Informed consent was taken from the participants and their parents or guardians. After getting informed consent, only the questionnaires were distributed, and participants were thanked for sparing their time. The study employed two assessment tools: The PGI Health Questionnaire and the Eustress Scale. The PGI Health Questionnaire measures physical and mental health and comprises 38 items. It was developed by Ref.^[23] The scale has good reliability with split-half and test-retest reliability of .86 and .88, respectively. With this, the Eustress Scale, developed by Ref.,^[24] measures the level of eustress in individuals. The scale consists of 15 items, of which five are filler items. The items were scored on a Likert scale ranging from 0 (never) to 6 (always), with higher scores indicating higher levels of eustress. The scale's internal consistency was good (Cronbach's alpha = 0.87), and the first and second administrations had Cronbach's alpha of .77 and .81, respectively.

Collected data were analyzed using correlation and stepwise multiple regression with the help of IBM SPSS software version 21 (IBM Company., Armonk, New York, USA). Demographic data were collected and categorical in nature; with this, data were of scale nature. To test Hypothesis 1, which posits that eustress plays a central role in shaping adolescents' psychological and physical well-being, we conducted a series of analyses following the principles of Lazarus and Folkman's Transactional Model of Stress and Coping. We employed correlation analysis to investigate the relationship between eustress levels and mental and physical health. This analysis allowed us to assess the strength and direction of the association between eustress and various well-being

indicators, providing insights into how eustress influences these outcomes.

For Hypothesis 2, which explores gender-based disparities in stress responses while recognizing the interplay of sociocultural and biological factors, to assess potential gender differences in eustress levels, we conducted an independent-samples *t*-test. This test compared the means of eustress scores between male and female adolescents, allowing us to determine whether there are statistically significant differences in eustress levels between the two gender groups.

Ethical consideration

The study received ethical clearance under institutional and ethical guidelines applicable to research involving human participants. The research design and informed consent procedures adhered to the established ethical standards. All participants were assured of the strict confidentiality of their responses, and their involvement was voluntary.

Results

This section presents the study's results, which aimed to delve into the intricate dynamics surrounding eustress, mental and physical well-being among adolescents, and how gender disparities interacted with these factors. Our investigation encompassed a range of demographic variables, including gender, socioeconomic status (SES), and age range, to gain deeper insights into their intersections with eustress levels within our cohort of 400 adolescent participants. Employing a rigorous data analysis approach involving correlation analyses, *t*-tests, and descriptive statistics, we probed our hypotheses concerning eustress's impact on psychological and physical well-being and the potential distinctions in stress responses between genders. The ensuing findings provide a comprehensive comprehension of our study's outcomes, illuminating the intricate interplay between eustress, demographic attributes, and the health of adolescents.

Table 1 illustrates the participants' distribution by gender and SES. The sample encompassed 400 adolescent students, comprising 199 females (49.8%) and 201 males (50.20%). Further, participants were classified into low and middle groups based on their SES. The table indicates that 50.0% of participants exhibited a low SES, while an equal 50.0% displayed a middle SES. The distribution of female and male participants within each group was comparable: 49.8% of females and 50% of males. In totality, the distribution of participants across genders and SES demonstrated a reasonable equilibrium.

Table 2 presents the means and standard deviations for physical health, mental health, and eustress scores,

along with the correlation coefficients between these variables and the gender factor. The variable of physical health exhibited an average of 3.10 (SD = 2.522), while the mental health variable demonstrated an average of 6.63 (SD = 4.395). These values suggested that, on the whole, participants tended to report higher levels of mental health compared to physical health. Physical and mental health had a significant and positive correlation ($r = 0.602$, $P < 0.01$). The mean eustress score was 24.71 (SD = 7.625), indicative of participants generally reporting moderate levels of eustress. The correlation between eustress and mental health was also significant and positive ($r = 0.563$, $P < 0.01$). In terms of the gender variable, it exhibited a mean of 1.50 (SD = 0.501) and displayed a negative correlation with both mental health ($r = -0.347$) and eustress score ($r = -0.264$). This indicates that male participants reported comparatively lower mental health and eustress levels than their female counterparts.

The Table 3, comprehensively overviews the study's core variables: Physical Health, Mental Health, and Eustress Score, dissected by gender (Female and Male). Upon analyzing the means and standard deviations, distinct trends come to light. Males consistently demonstrate higher scores across all three domains when compared to their female counterparts. Specifically, males exhibit superior Physical Health, boasting a mean score of 3.55 compared to females' mean of 2.65. In Mental Health, males outshine females with a mean score of 8.10, significantly exceeding females' mean of 5.17. This pattern extends to the Eustress Score, where males register a mean of 26.63, notably eclipsing females' mean of 22.82. These disparities are substantial and statistically significant, as affirmed by the *t*-test outcomes ($P = 0.000$) for all three variables. These findings underscore the existence of gender disparities in the adolescent experience, prompting a deeper exploration into the determinants of these variations and their potential implications for gender-specific interventions and support mechanisms.

To conduct a deeper investigation, a stepwise linear regression analysis was employed to explore the interplay between Mental Health, Physical Health, and Eustress Score. The outcomes of this analysis are detailed in the Coefficients Table 4. In Model 1, the outcomes highlight that Mental Health exerts a significantly positive influence on the Eustress Score ($B = 0.804$, $t = 10.428$, $P < .001$), as indicated by the standardized coefficient of 0.463. This suggests that a surge in Mental Health corresponds to an elevation in Eustress Score. Moreover, the constant term also significantly impacts the Eustress Score ($B = 19.389$, $t = 31.657$, $P < .001$).

Table 1: Demographic details of the participants

Variables	N	Percent
Gender		
Female	199	49.80%
Male	201	50.20%
Socioeconomic status		
Low	200	50.00%
Middle	200	50.00%

Table 2: Correlation analysis between eustress, mental health, and physical health

	Mean	Std. deviation	Physical health	Mental health	Eustress score
Physical Health	3.10	2.522	1	0.602**	0.391**
Mental Health	6.63	4.395	0.602**	1	0.463**
Eustress Score	24.71	7.625	0.391**	0.463**	1

** $P < 0.01$.

Table 3: Mean differences in eustress, physical health, and mental health among Indian adolescents

Variables	Mean	Std. deviation	t	P
Physical Health				
Female	2.65	2.372	3.605	0.000
Male	3.55	2.593	3.606	0.000
Mental Health				
Female	5.17	3.991	7.050	0.000
Male	8.10	4.302	7.053	0.000
Eustress Score				
Female	22.82	7.714	5.160	0.000
Male	26.63	7.050	5.158	0.000

$P < 0.001$

Table 4: Stepwise linear regression among variables

Model		Coefficients ^a			t	Sig.
		Unstandardized coefficients		Standardized coefficients		
		B	Std. error	Beta		
1	(Constant)	19.389	0.612		31.657	0.000
	Mental Health	0.804	0.077	0.463	10.428	0.000
2	(Constant)	18.958	0.620		30.568	0.000
	Mental Health	0.619	0.095	0.357	6.490	0.000
	Physical Health	0.533	0.166	0.176	3.204	0.001

^a Dependent Variable: Eustress Score

Advancing to Model 2, Physical Health was incorporated as an additional predictor variable. The findings demonstrate that both Mental Health ($B = 0.619$, $t = 6.490$, $P < .001$) and Physical Health ($B = 0.533$, $t = 3.204$, $P = .001$) wield significant positive effects on the Eustress Score, exhibiting standardized coefficients of 0.357 and 0.176, respectively. The constant term retains its significance ($B = 18.958$, $t = 30.568$, $P < .001$). Our findings underscore that both Mental Health and Physical Health are positively intertwined with Eustress Score. These findings hold significant implications for comprehending the factors contributing to favorable psychological

outcomes and may offer insights into interventions that foster mental and physical well-being.

Discussion

The primary aim of our study was to explore the intricate relationship between eustress, mental health, physical health, and gender among adolescents in India. Our findings illuminate critical aspects of adolescent well-being and stress responses.

Our study aligns with contemporary research highlighting the role of eustress, which is positive stress associated with motivation and personal growth.^[25] Although there is ongoing debate regarding the terminology surrounding eustress, its conceptualization remains valuable in understanding how adolescents perceive and respond to stressors. Our results reveal a significant positive correlation between eustress and mental health, emphasizing the potential advantages of positive stress in enhancing psychological well-being.^[26,27] Our study underscores the significance of safeguarding robust mental and physical health among Indian adolescents. Nonetheless, further exploration is imperative to elucidate the concept of eustress and its intricate interplay with mental and physical well-being. The stepwise linear regression analysis outcomes highlight the substantial and positive predictive role of mental health in eustress scores corroborating prior research that identified a positive link between mental health and eustress.^[28-30] This alignment with recent studies demonstrates that higher eustress levels are associated with improved mental health and greater resilience, particularly in response to academic pressures.^[29,31] These findings underscore the importance of recognizing the positive aspects of stress in adolescent development.

The concept of eustress is particularly relevant in understanding why males in our study reported higher eustress scores than females. Recent research suggests that males may be more inclined to perceive specific stressors, such as academic challenges or competitive situations, as motivating rather than distressing.^[32,33] This inclination toward eustress responses could explain the observed gender differences in eustress levels among adolescents, as highlighted in our study. Also, recent studies have increasingly recognized the significance of gender disparities in adolescent well-being. A literature review reveals a growing body of research emphasizing how stress and well-being manifest in males and females during adolescence. For instance, a study published by Ref.^[34-36] found that adolescent females report higher levels of perceived stress and greater vulnerability to stress-related mental health issues, such as anxiety and depression, than their male counterparts. These findings

align with the eustress score between gender and mental health observed in our study.

Conversely, research has also highlighted that adolescent males may be less likely to seek help for mental health issues, often masking their emotional distress through externalizing behaviors, including risky behaviors or aggression. This masking behavior may contribute to the lower reported stress levels and higher eustress scores among males, as observed in our study. A recent study^[37] illustrates this phenomenon, shedding light on how gender norms and societal expectations can impact stress expression among adolescent males.

Furthermore, our study found that eustress significantly correlates with mental and physical health among adolescents, consistent with previous research.^[38,39] Our findings could also be influenced by cultural nuances, given that India epitomizes a collectivist society where emotional expression may differ from individualistic cultures.^[40] Recognizing the potential impact of cultural factors on adolescents' perception and experience of eustress is crucial. Cultural differences in emotional expression and coping mechanisms may shape how adolescents in India navigate stress and eustress. Further exploration of these cultural factors is warranted to understand eustress in this context comprehensively. Our study underscores the significance of safeguarding robust mental and physical health among Indian adolescents. Nonetheless, further exploration is imperative to elucidate the concept of eustress and its intricate interplay with mental and physical well-being.^[41,42]

Similarly, our results suggest that good physical health is positively correlated with eustress scores, underscoring the role of physical well-being in experiencing eustress. This alignment mirrors earlier studies demonstrating the favorable impact of physical exercise on psychological well-being.^[43] Interestingly, recent research has suggested that the term eustress should be abandoned as it is misleading, and the term stress should be used instead. This is because the body's adaptation reaction to stress can neither be classified as positive nor negative but depends on various interactions between the body and the environment.^[44] Additionally, studies have shown that prenatal maternal psychological distress can impact brain growth, metabolism, and cortical maturation.^[45] Hence, considering the divergent outcomes concerning eustress, the need for a more precise delineation of the construct becomes apparent.

These insights are crucial for understanding factors pivotal to positive psychological outcomes and guiding interventions geared toward bolstering mental and physical well-being, particularly in the context

of adolescence in India. In conclusion, our study underscores the importance of promoting robust mental and physical health among Indian adolescents. However, it also raises intriguing questions about the role of eustress and gender disparities in their well-being. As the debate about the terminology surrounding eustress continues, we acknowledge the need for a more precise delineation of the construct to capture its nuanced effects accurately.^[46] Additionally, the growing recognition of gender disparities in adolescent well-being demands further research and the development of gender-sensitive interventions.

Moreover, exploring the influence of cultural factors on adolescents' perception and experience of eustress is essential for tailoring support mechanisms effectively.^[47] Cultural variations in emotional expression and coping strategies significantly shape how adolescents in India navigate stress and eustress. Understanding these nuances can guide the development of culturally sensitive interventions and support systems. It is also crucial to consider how socioeconomic factors intersect with eustress and well-being within the cultural context.^[48-50]

Our study serves as a foundation for ongoing research in this multifaceted domain. Future studies can delve into the specific cultural practices and coping mechanisms adolescents employ in response to eustress, providing insights into practical strategies for promoting their well-being. Additionally, investigating the long-term impact of gender disparities in stress responses during adolescence on mental and physical health outcomes could inform preventive measures and interventions to reduce gender-related health disparities in adulthood.

Limitations and recommendation

The study's findings need to be interpreted within several limitations. Primarily, the participants were exclusively drawn from two districts in Haryana, thereby curtailing how the results can be generalized to a broader and more diverse populace. Moreover, excluding students from private schools within the sample might have introduced a bias toward specific socioeconomic strata. Lastly, relying solely on self-report questionnaires as the data collection method could have introduced response and social desirability biases. To mitigate these limitations and enhance the robustness of the outcomes, future research endeavors should strive to recruit participants from a more expansive array of geographical locations. Additionally, adopting a diverse range of data collection methods could bolster the validity and reliability of the results. Despite these limitations, there are a few future recommendations. Firstly, an in-depth examination of the influence of specific cultural factors on how adolescents perceive and

experience eustress in various cultural contexts would be invaluable. These cultural nuances significantly shape adolescents' responses to stress, and further research in this area can inform the development of culturally sensitive interventions and support mechanisms. Secondly, conducting longitudinal studies to track the progression of eustress and its effects on adolescents over time holds great potential. Such longitudinal research can provide insights into the evolving nature of eustress, its potential long-term consequences, and the contributing factors. This approach offers a comprehensive understanding of the dynamic aspects of eustress during adolescence. Lastly, investigating the intersection of socioeconomic factors with eustress and well-being within specific cultural contexts can offer unique insights. Socioeconomic disparities often intersect with stress and health outcomes, and exploring these intersections within cultural contexts is vital for addressing health disparities effectively. These proposed avenues for future research aim to advance our knowledge and contribute to developing interventions and policies to enhance adolescents' well-being.

Conclusion

In conclusion, this study furnishes invaluable insights into the intricate interplay of eustress, mental health, and physical health among Indian adolescents. Our findings underline the positive association between eustress, mental health, and physical health. While these findings carry implications for interventions geared toward promoting well-being, further research is indispensable to illuminate the mechanisms that underscore the effects of eustress on health outcomes. Given the variability in outcomes and the scarcity of existing literature corroborating the non-significant link between eustress and mental and physical health, additional studies are imperative in this domain to enhance our comprehension of this multifaceted relationship. Such endeavors can elucidate eustress's role in advancing optimal functioning and well-being across diverse populations.

The gender disparities identified in this study have important implications for adolescent interventions and support mechanisms. Recent research emphasizes the need for gender-sensitive approaches to promoting adolescent well-being. For example, interventions aimed at improving mental health outcomes for adolescent females may benefit from addressing the unique stressors and coping strategies that females experience. This could include providing targeted support for managing stress-related symptoms such as anxiety and depression. In the case of males, recent studies advocate for fostering an environment where emotional expression and help-seeking behaviors are encouraged and destigmatized. Programs that promote

positive coping strategies, emotional intelligence, and communication skills among adolescent males could be instrumental in improving their overall well-being.

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Conflicts of interest

There are no conflicts of interest.

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