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Cross Sectional Analysis of Emotion Regulation, Psychological Distress and Well Being of Emerging Adult Students in Urban India Post COVID 19

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Cross Sectional Analysis of Emotion Regulation, Psychological Distress and Well Being of Emerging Adult Students in Urban India Post COVID 19

Abstract

India's vast youth population offers a unique lens for exploring their emotional regulation and mental health, which remain underexplored despite their importance. This study, the first of its kind, examines post-COVID cognitive reappraisal (CR), expressive suppression (ES), and their broader mental health interconnections among 1628 young adult students (aged 18–29) from higher educational institutions in India's Tier-1 cities using the Mental Health Inventory (MHI-38) and Emotion Regulation Questionnaire (ERQ). Variations in emotion regulation and mental health were analysed across gender, age groups, course categories, cities, and geographical zones using t-tests and ANOVA. Significant gender differences in emotion regulation and mental health were found. Cognitive reappraisal varied across gender, age groups, cities, and geographical zones. Females reported more usage of cognitive reappraisal and experienced greater distress compared to males. Cognitive reappraisal correlated with better psychological well-being, whereas expressive suppression correlated with psychological distress. Alarmingly, 42% of young adult participants exhibited medium to high levels of expressive suppression, indicating a pressing psychological crisis that could have devastating effects on the emotional well-being and mental health of young adults. Findings suggest that while pre-existing emotional regulation patterns have persisted, post-pandemic stress has intensified their impact, widening gender and regional disparities in mental health. These results underscore the need for Interventions promoting mental health awareness and emotion management techniques for the overall well-being of young adults, especially in higher educational landscapes.

Keywords: *Mental Health, Emotion Regulation, Cognitive Reappraisal, Expressive Suppression, Young Adults, Higher Education.*

1. Introduction

India has the world's largest reservoir of young adults, with the potential to shape its future through innovation, culture, and the economy (Employment Opportunities for Young People,

2024). Considering the ongoing global issues, the mental health of this demographic is crucial (Liang et al., 2020). The COVID-19 pandemic has worsened previous mental health issues and added stressors worldwide (Bell et al., 2023; Clemente-Suárez, 2021). For young people in particular, the pandemic has made emotion regulation more difficult, contributing to heightened anxiety, distress, and depression (Hen et al., 2022; Hebbani, 2018). Given India's increasing suicide rates among the youth, they must learn to control their emotions (Menefee et al., 2022; Bhola et al., 2017).

Emotion regulation, which plays a crucial role in safeguarding the emotional well-being of young people, comprises two primary components: cognitive reappraisal and expressive suppression (Verzeletti et al., 2016; Cutuli, 2014). Reinterpretation, or cognitive reappraisal, improves emotional recovery, happiness (Moore et al., 2008; Walker et al., 2021) and promotes positive interpersonal behaviour (Cutuli, 2014). Expressive suppression, which involves inhibiting the outward display of emotions, is associated with heightened negative affect and chronic psychological strain (Gross & John, 2003; Kashdan et al., 2005). These concerns underscore the importance of examining both adaptive and maladaptive emotion regulation strategies, as they have the potential to safeguard mental health and promote positive adjustment among young people in higher education (Restrepo et al., 2023).

Previous research underscores the gravity of student mental health, with high rates of suicidal thoughts, attempts, depression, and anxiety highlighting their psychological vulnerability in academic settings (Cherian et al., 2024). Young adults (18–29 years) face distinct developmental and societal challenges, including political instability, climate change, and socioeconomic inequities, that significantly affect their mental health and exacerbate anxiety and distress (Bonnie et al., 2015; Hellström & Beckman, 2021). This life stage encompasses various stressors, including academic stressors, job insecurity, financial autonomy, and shifting social dynamics (Wood et al., 2017). In India, societal expectations and familial

traditions often clash with the ambitions of young people, creating a complex emotional landscape (Suchday, 2015; Gk, 2024). Suicidal ideation, despair, and anxiety are some of the harmful mental health effects that can result from not being able to control one's emotions in the face of excessive stress (Dillon et al., 2019). Effective emotional regulation promotes resilience and enhances psychological well-being (About Emotional Well-Being, 2024).

Despite their importance, there is a dearth of research studies that focus on the mental health and emotional regulation of young adults in the higher education system of India, especially after the devastating effects of the COVID-19 pandemic. The present study is a sincere attempt understand, analyse and fill that gap, through surveys carried out across all Tier-One cities in India over 120 days, covering more than 15,000 kilometres, with an aim to understand post-COVID Emotion Regulation, i.e., Cognitive Reappraisal (CR), Expressive Suppression (ES), and their broader Mental Health interconnections among 1628 young adult students (aged 18–29) pursuing higher education across various educational institutions in India's Tier-1 cities using the Mental Health Inventory (MHI-38) and Emotion Regulation Questionnaire (ERQ). By addressing mental health in emerging adulthood, this study contributes to achieving the United Nations Sustainable Development Goal 3 (Good Health and Well-being) and its mental health target, while also informing interventions that support global health and the Human Development Index (HDI).

2. Methods

Research Design

This study employed a cross-sectional correlational strategy.

Study Sample

The study sample consisted of 1,628 young adult students aged 18–29 years (47.1% male and 52.9% female) pursuing higher education in various educational institutions across all Tier-1

cities in India. Surveys in person, in hard copy, from the participants were carried out. The study employed a multi-stage sampling approach. In the first stage, from the eight Tier-1 cities of India (Ahmedabad, Bangalore, Chennai, Delhi, Hyderabad, Kolkata, Mumbai, and Pune), one city was randomly selected. In the second stage, seven types of higher educational institutions were randomly selected from the selected city, which included one central university, two state universities (one private and one government), two arts and science colleges (one private and one government), and two engineering colleges (one private and one government). These types of educational institutes are chosen to ensure diversity in the sample. In the third stage, data were collected from young adults enrolled in these institutions, including UG, PG and PhD students, depending on availability. This process is repeated for all the Tier-1 cities of India.

Inclusion/Exclusion Criteria

Inclusion criteria required that participants be (a) young adults aged 18–29 years, (b) enrolled as undergraduate, postgraduate, or doctoral students in selected higher educational institutions in Tier-1 cities, and (c) willing to provide informed consent.

Exclusion criteria included students (a) outside the 18–29-year age range, (b) not actively enrolled in higher education at the time of data collection, and (c) those who declined or withdrew consent.

Procedure

In each city, after selecting the educational institution, the researchers approached the institutional authorities (principal, director, or head of the Department) in person. The details of the research and the ethical guidelines that would be followed while collecting or reporting

the data in future were explained to the authority, and approvals were obtained. The class/department/section of students, as directed by the approving authority, was approached. Participants in a group (primarily in classroom settings) were briefed on the research objectives, their rights, and assured of privacy and confidentiality. Participant consent forms were signed in hard copy, and hard copies of the surveys were distributed. Participants then completed the surveys voluntarily and without compensation, which took 15–20 minutes to complete. Thorough efforts were made to enter, clean, and analyse the data.

Measures

Since English is the language of teaching at most of India's higher educational institutions, all the study instruments were given to the participants in English to collect data.

Socio-demographic Information

Socio-demographic information was collected using a comprehensive questionnaire that included queries about participants' gender, age, education level, state of domicile, institution type, and residential city.

Mental Health Inventory (MHI-38)

The Mental Health Inventory (MHI-38) by Veit & Ware (1983) is a validated tool with 38 questions developed to assess exclusive mental health dimensions like anxiety, depression, loss of behavioural/ emotional control, life satisfaction, general positive affect, and emotional ties under three broad categories: Global Mental Health Index, Psychological Well-Being, and Psychological Distress. It uses a 6-point Likert scale; higher scores on positive subscales indicate better well-being, and higher scores on negative subscales indicate higher levels of distress. MHI-38 has a high Cronbach's alpha of .92 and subscale reliabilities often exceeding .80; it is recognised as a robust tool for diverse populations.

Emotion Regulation Questionnaire (ERQ)

The Emotion Regulation Questionnaire (ERQ), developed by Gross and John (2003), assesses two emotion regulation strategies, i.e., cognitive reappraisal (CR) and expressive suppression (ES). CR, an adaptive approach, fosters better emotions, relationships, and well-being, while ES, a maladaptive strategy, often leads to adverse outcomes (Ioannidis & Siegling, 2015; Cutuli, 2014). The ERQ, rated on a 7-point Likert scale, is a highly reliable and valid tool to assess emotion regulation.

Data Screening and Analysis

The dataset was carefully screened prior to analysis. Seven participants who identified as belonging to the third gender were omitted, as their tiny number did not permit meaningful subgroup comparisons. Surveys with more than 20% missing responses were excluded, while minor missing values were addressed using mean imputation at the variable level; in cases of systematic absence, listwise deletion was applied. Standard deviations were calculated for each participant's responses within each scale to assess how much their answers varied across items. Cases with a standard deviation of zero or less than 0.25, indicating that participants had given uniform or nearly identical responses (e.g., selecting the same rating for all items) were removed, as such patterns suggested non-engagement or a lack of meaningful differentiation in their responses (Curran, 2015). Preliminary checks indicated that outliers were either not present or minimal and did not affect the overall analysis. The data collected in this study follow a normal distribution. Descriptive statistics, such as percentage, range, mean, and standard deviation, were obtained using SPSS, Version 23.0. Inferential statistics were analysed through t-tests and one-way ANOVA.

Ethical Considerations

The study received approval from the Institutional Ethics Committee (IEC) of SRM University AP, Andhra Pradesh, India, the institute where the authors are affiliated, ensuring its legitimacy. Informed consent with signatures was obtained from participants on the hard

copy of the survey booklet, emphasising their voluntary participation. Privacy was assured by not asking them to disclose their names or email addresses. The research complied with the Declaration of Helsinki, the World Medical Association, the American Psychological Association (APA), and the Indian Council of Medical Research (ICMR) ethical guidelines, as well as recommendations for scholarly work, thereby reinforcing its integrity.

The American Psychological Association (APA) Ethical Principles of Psychologists and Code of Conduct (2017) provide internationally recognised standards for research involving human participants. These guidelines emphasise respect for the dignity, rights, and welfare of individuals. In line with APA principles, the present study ensured voluntary participation, obtained informed consent, guaranteed confidentiality, minimised potential harm, and allowed participants the right to withdraw at any stage without penalty.

The Indian Council of Medical Research (ICMR) National Ethical Guidelines for Biomedical and Health Research Involving Human Participants (2017) form the cornerstone of ethical research practice in India. These guidelines highlight autonomy, beneficence, non-maleficence, and justice as core principles. They require that studies involving human participants receive prior approval from a recognised Institutional Ethics Committee (IEC), ensure scientific and social value, and protect vulnerable populations such as young adults. In this study, the principles of ICMR were adhered to by ensuring fairness, privacy, and data protection throughout the research process. Special attention was paid to obtaining a diverse and representative sample, thereby strengthening the foundation of the study.

Conflict of Interest

The authors declare that there are no financial or non-financial conflicts of interest related to this study.

Data Availability

The Data collected from the participants and used for analysis in this study are available upon reasonable request from the corresponding author.

3. Results

The Sample's Description

The representative sample comprised 1628 participants, comprising 47.1% (767/1628) males and 52.9% (861/1628) females, categorised based on several demographic and institutional characteristics. Age groups ranged from 18–20 years (79.5%, n = 1294), 21–24 years (18.1%, n = 294), and 25–29 years (2.5%, n = 40). Course categories are undergraduates (UG) (84.7%, n = 1379), postgraduates (PG) (14.6%, n = 237), and PhD (0.7%, n = 12).

Geographically, participants are natives of four zones: North (16.4%, n = 267), East (12.9%, n = 210), West (29.0%, n = 472), and South (41.7%, n = 679). The sampling consisted of participants pursuing higher education in central universities (11.7%, n =190), state universities (24.8%, n = 404), private universities (17.9%, n = 292), government arts and science colleges (5.2%, n = 85), private arts and science colleges (23.5%, n =383), government engineering colleges (5.6%, n=91) and private engineering colleges (11.2%, n = 183) representing a diverse sample of students.

City-wise representation of participants was students pursuing higher education in various educational institutes of Hyderabad (15.8%, n = 258), Chennai (11.6%, n = 189), Bangalore (14.9%, n = 242), Pune (15.4%, n = 251), and Mumbai (11.7%, n = 191), Ahmedabad (7.3%, n = 119), Kolkata (9.8%, n = 160), and Delhi (13.4%, n = 218). These demographics provide insights into the academic and geographical diversity of the sample.

Description of Emotion Regulation

The levels of emotion regulation were assessed through two distinct strategies, i.e., cognitive reappraisal and expressive suppression. Cognitive reappraisal scores were categorised into three levels based on the scores, i.e., high (>5.5), medium (4.0–5.5), and low (<4.0), with participant distributions of 601, 606, and 421, respectively. Similarly, expressive suppression was classified into high (>4.5), medium (3.0–4.5), and low (<3.0), with corresponding participant counts of 309, 374, and 945. Figure 1(a) shows the levels of emotion regulation strategies across the participants in the study using pie charts.

Description of Mental Health

The MHI-38 mental health dimensions assessed in this study encompass a range of psychological constructs, each with distinct mean scores, standard deviations, observed and possible score ranges. Anxiety (mean = 28.72, SD = 7.85), with actual score range 9 to 53 out of a possible 9 to 54. Depression (mean =11.72, SD = 3.99), with actual and possible scores ranging from 4 to 23. Loss of Behavioural/Emotional Control (LBEC) (mean = 26.85, SD = 7.62), with actual and possible scores ranging from 9 to 53. In terms of positive psychological indicators, General Positive Affect (GPA) (mean = 35.14, SD = 8.90), with actual and possible scores ranging from 10 to 60. Emotional Ties (ET) (mean = 6.87, SD = 2.71), with actual and possible scores ranging from 2–12. Life Satisfaction (LS) (mean = 3.59, SD = 1.26), with actual and possible scores ranging from 1 to 6.

Global scales included Psychological Distress (PD) (mean = 73.86, SD = 19.08), with an actual score range of 24-142, and a possible score range of 24–140. Psychological Well-Being (PWB) (mean = 48.83, SD = 11.81), with the same possible and actual score ranges, 14 to 84. The overall Mental Health Index (MHI) (mean = 139.44, SD = 26.89), with actual scores ranging from 45 to 226 out of a possible score range of 38 to 226.

3.1 Gender-wise Analysis

Independent samples t-tests (Table 1) examined variations across emotion regulation strategies and mental health dimensions among male and female respondents, as illustrated in Figure 1 (b) and (c), respectively. Significant gender differences are observed. Females scored significantly higher in Cognitive Reappraisal, Anxiety, Depression, Loss of Behavioural/Emotional Control, Emotional Ties, and Psychological Distress and significantly lower in General Positive Affect, Life Satisfaction, Psychological Well-Being, and Mental Health Index, indicating the severity of distress compared to their male counterparts.

(Table 1 May be Inserted Here)

(Figure 1 May be inserted here.)

Females reported more frequent use of Cognitive Reappraisal than males in regulating emotions. No significant variations in gender are reported in Expressive Suppression.

3.2 Analysing Variations in Emotion Regulation

ANOVA revealed significant variations in cognitive reappraisal across age groups, course categories, cities, and zones as presented in Table 2. Tukey's post hoc tests for age groups revealed that younger participants, specifically those in the 18-20 age group, used cognitive reappraisal less frequently than older participants in the 21-24 age group, highlighting age-related variations in emotion regulation. Figure 2 (a) illustrates these differences.

Tukey's post hoc tests for course categories showed significant cognitive reappraisal differences between Undergraduate (UG) and Postgraduate (PG) students, with PG students relying more on cognitive reappraisal for emotion regulation than their UG counterparts.

(Table 2 May be Inserted Here)

(Figure 2. Maybe inserted here.)

Tukey's post hoc tests for cities revealed significant differences in cognitive reappraisal across cities. Hyderabad reported a lower rate of cognitive reappraisal than Chennai, Bangalore, Pune, Mumbai, Ahmedabad, and Delhi. Additionally, Chennai students engaged in cognitive reappraisal more frequently than those in Kolkata.

Tukey's post hoc tests also revealed significant cognitive reappraisal differences across geographical zones. East-zone participants scored lower in cognitive reappraisal than the West, indicating less frequent use. The West reported higher usage of cognitive reappraisal than the South, suggesting regional variations in emotion regulation strategies.

ANOVA found no significant differences in expressive suppression across age groups, course categories, or zones, but revealed city-specific variations. Tukey's post hoc analysis showed Hyderabad reporting lower expressive suppression usage than other cities, while Chennai scored higher than Mumbai, indicating more frequent emotional suppression among Chennai students. Bangalore and Pune also reported higher expressive suppression than Mumbai, suggesting greater reliance on suppression in these cities. Figures 2(c) and 2(d) illustrate variations in cognitive reappraisal and expressive suppression across cities and zones.

3.3 Analysing Correlations between Emotion Regulation and Mental Health Dimensions

Cognitive reappraisal negatively correlates with Loss of Behavioural Emotional Control, indicating improved emotional and behavioural control among frequent users of this emotion regulation strategy. It also shows positive correlations with General Positive Affect, Psychological Well-Being, and Mental Health Index, reinforcing its role in enhancing mental health.

Conversely, expressive suppression positively correlates with anxiety, depression, and Loss of Behavioural Emotional Control, suggesting that higher expressive suppression leads to increased distress and diminished emotional control. Expressive suppression is also negatively correlated with General Positive Affect, Emotional Ties, Life Satisfaction, Psychological Well-Being, and Mental Health Index, highlighting its association with reduced positive affect, weaker emotional ties, lower life satisfaction, and poorer mental health outcomes.

4. Discussion

This cross-sectional study investigates the Mental Health and Emotional Regulation of young adults pursuing higher education in tier-one cities of India, in the aftermath of the COVID-19 pandemic.

Gender Differences

Gender-wise analysis using t-tests revealed significant variations in mental health and emotion regulation. Female students reported higher distress and lower well-being than males, as supported by the longitudinal study of first-year college students by Fruehwirth, Biswas, and Perreira (2021), which showed a post-COVID rise in anxiety (18.1% to 25.3%) and depression (21.5% to 31.7%), particularly among women. Although earlier studies had noted gender differences in mental health, these disparities have become far more pronounced in the post-pandemic period, with female students experiencing significantly higher stress and lower well-being than their male counterparts (Prowse et al., 2021; Mittal, 2021). This widening gap may be attributed to factors such as greater academic disruption, increased domestic and caregiving responsibilities, social isolation, and uncertainty about

future academic and career prospects, all of which have disproportionately affected young women (Santo et al., 2022; Gulati et al., 2023).

Notable gender differences were also observed in emotion regulation, i.e. both cognitive reappraisal and expressive suppression. Females demonstrated a greater tendency for cognitive reappraisal than males, aligning with post-pandemic research showing that women increasingly adopt positive emotion regulation strategies to cope with elevated stress levels (Preston et al., 2021; Flores-Torres et al., 2022). This pattern reflects a clear shift from pre-COVID findings, where females either showed a lower tendency for cognitive reappraisal than males (Perchtold et al., 2019) or no significant gender differences were reported (Ferschmann et al., 2021).Such greater use of cognitive reappraisal among females may be an adaptive response to their higher vulnerability to emotional distress, as they also report greater risk of suicidal thoughts and attempts linked to poor emotion regulation (Bhola et al., 2013).

Age Groups

Young adult students in the age group 18–20 employed cognitive reappraisal less frequently than those in the age group 21–24, consistent with the findings of Opitz et al. (2012) and Mehrotra and Tripathi (2012), who attributed these disparities to developmental differences in emotional regulation abilities. As individuals mature, their cognitive and emotional control improves, enhancing their capacity to manage complex emotions (Olderbak et al., 2022). Social and educational contexts, such as supportive school environments, peer influence, and family support, further encourage the use of adaptive emotion regulation strategies (Kelley et al., 2018). Notably, while overall emotional distress increased post-COVID, the age-related

pattern in reappraisal use remained consistent, with younger students continuing to show lower use than older peers.

Education Levels

UG students reported lower cognitive reappraisal scores than PG students, consistent with Bakul and Heanoy (2021), who found that postgraduates used cognitive reappraisal more to cope with pandemic-related anxiety and career uncertainty, highlighting the adaptive role of higher education and emotional maturity in regulating stress during challenging contexts. This pattern echoes pre-COVID findings by Nakagawa et al. (2017), who showed that older adults used cognitive reappraisal more often, reflecting the impact of age and experience on emotional regulation. Overall, pre- and post-COVID findings suggest that developmental maturity remains central to effective emotional coping among students.

Regional Variations

City-wise variations: Students pursuing higher education in Hyderabad city reported lower use of both cognitive reappraisal and expressive suppression compared to their peers in Chennai, Bangalore, Pune, Mumbai, Ahmedabad, and Delhi. This indicates the presence of a more spontaneous or unregulated emotional expression among the students, often shaped by cultural contexts that place less emphasis on emotional control. Consistent with research by Ramzan and Amjad (2017), Kuppens and Verduyn (2017) and Haga, Kraft, and Corby (2009), such limited regulation can heighten psychological distress and reduce emotional adaptability.

Chennai students reported higher cognitive reappraisal than those of Kolkata. The students of this city also reported significantly higher expressive suppression compared to students of Mumbai. Higher cognitive reappraisal reflects adaptive coping, while greater suppression

shows cultural restraint and sensitivity to social norms (Liang et al., 2017; Butler et al., 2003). Overall, Chennai students demonstrate a more balanced and socially guided emotional regulation style than the spontaneous pattern seen in Hyderabad students.

Similarly, students in Bangalore and Pune scored higher in expressive suppression than those in Mumbai, reflecting greater emotional restraint and adherence to social norms of composure and control. In contrast, Mumbai students reported low expressive suppression, indicating a more open and expressive emotional style shaped by a diverse, fast-paced environment.

Zone-wise Variations: Participants who are natives of the East zone reported lower use of cognitive reappraisal than those from the West zone, while those in the West zone outperformed the South, indicating regional and cultural differences in emotion regulation tendencies (Ford & Mauss, 2015; Liddell & Williams, 2019). This pattern mirrors pre-pandemic trends, indicating that cognitive reappraisal is a culturally ingrained strategy, relatively unaffected by situational disruptions like the pandemic.

At both city and zonal levels, cultural influences on cognitive reappraisal appear stable, though pandemic-related stress may have temporarily magnified these existing regional distinctions

Correlations

Cognitive reappraisal showed weak negative correlations with anxiety and depression. This aligns with a body of research both before and after COVID-19. Pre-pandemic studies (Troy et al., 2010; d'Arbeloff et al., 2018) found that higher cognitive reappraisal ability or use is

associated with fewer depressive and anxious symptoms. Post-COVID studies (e.g., Xu et al., 2020; Haver et al., 2023) similarly report that reappraisal serves a protective or buffering role in stressful contexts. These suggest that the relationship between reappraisal and mental health remains stable across crises.

Cognitive reappraisal exhibited a significant negative correlation with Loss of Behavioural/Emotional Control. This finding aligns with pre-pandemic research demonstrating that higher reappraisal use is inversely related to internalizing symptoms and emotional dysregulation ((Niu et al., 2023; Lin, 2022; Hendricks & Buchanan, 2015). Recent studies conducted during or after the pandemic further support this association, showing that reappraisal mitigated distress under COVID-19 stressors (Dawel et al., 2023; Haver et al., 2023; Zhu et al., 2020). Thus, our results suggest that reappraisal remains a protective emotion-regulation strategy across crisis and non-crisis contexts.

Cognitive reappraisal was positively correlated with General Positive Affect, Psychological Well-Being, and the overall Mental Health Index, supported by both pre- and post-COVID research. Pre-pandemic studies show a robust link between reappraisal and positive mental health outcomes (Marciniak et al., 2024; Shum et al., 2025). More recent pandemic-era work among students also demonstrates that higher reappraisal use predicts better mental wellbeing and quality of life under stress (Xiao et al., 2025; Berro et al., 2023). Together, these data suggest that cognitive reappraisal remains a key protective strategy for maintaining mental health across contexts.

Cognitive reappraisal showed weak and insignificant links with emotional ties and life satisfaction, suggesting it plays a limited role in improving relationships or overall happiness.

Both pre- and post-COVID studies report similar results, indicating that reappraisal mainly helps reduce negative emotions rather than directly increasing life satisfaction (Gutiérrez-Cobo et al., 2021; Kornienko et al., 2023; Murray et al., 2024).

Expressive suppression showed significant positive correlations with anxiety, depression, and loss of behavioural or emotional control, indicating that heightened emotional inhibition is linked to poorer mental health. Pre-pandemic research (Larsen et al., 2012; Chen et al., 2018; Judah et al., 2022) reported similar patterns, and post-COVID studies (Xiao et al., 2025; Öztekin et al., 2025; Liang et al., 2022) confirm that reliance on suppression under elevated stress continues to predict adverse mental-health outcomes. Expressive suppression showed negative correlations with positive affect, emotional ties, life satisfaction, psychological well-being, and overall mental health. Together, these findings show that expressive suppression remains a maladaptive regulation strategy, with its negative effects further intensified under post-COVID stress (Su et al., 2014; Chen et al., 2018; Yu et al., 2023; Delgado-Herrera et al., 2025; Larionow et al., 2025).

5. Limitations

This study's scope is limited to emerging adults in higher education within tier-one Indian cities, excluding those from other cities and alternative educational settings. It does not consider individuals without formal education or those unemployed or employed post-education. The cross-sectional design restricts causal inference and longitudinal analysis. Furthermore, the absence of qualitative analysis limits a deeper understanding of the experiences. The focus on tier-1 cities may compromise the generalizability of findings to other regions.

6. Future Research Directions

We suggest areas for future research, such as Longitudinal studies to track changes in mental health and emotional regulation strategies over time. Qualitative research can be conducted to gain deeper insights into the lived experiences of young adults regarding mental health and emotional regulation. Expanding the research to include tier-2 and tier-3 cities to understand the broader mental health landscape among young adults in India.

7. Implications

This research highlights the emotion regulation and mental health patterns of young adults in higher education. The findings guide stakeholders in creating supportive environments that foster well-being, build resilience, and reduce suicide risk.

Implications for Students

Students can strengthen their mental health by actively practicing emotion regulation strategies such as cognitive reappraisal. Participating in skill-based workshops and counselling sessions can help them manage academic stress, regulate negative emotions, and enhance resilience.

Implications for Parents

Parents can support their college-going children by encouraging open conversations about emotions and promoting adaptive strategies like mindfulness and cognitive reappraisal, thereby reinforcing emotional balance and coping skills at home.

For Educational Institutions

Universities and colleges should embed emotion regulation training within orientation, counselling, and wellness programs. Faculty and mentors can be equipped to identify emotional distress early and guide students in using constructive regulation strategies.

For Policymakers

Policy makers should design student-focused mental health frameworks that include structured emotion regulation training across higher education institutions. Region-specific, culturally sensitive programs can foster emotional resilience and well-being among India's young adult student population.

For Mental Health Professionals

Counsellors and psychologists working with college students should include emotion regulation training, especially cognitive reappraisal in therapy and preventive programs. Using evidence-based methods, they can help students recognize unhelpful emotional patterns, build adaptive coping skills, and strengthen resilience to academic and personal stressors. Collaborating with institutions can further expand these efforts through workshops, peer-support groups, and campus wellness initiatives.

8. Conclusions

Our findings highlight significant gender differences in cognitive reappraisal, emphasising the importance of developing tailored emotion regulation strategies within higher education. While expressive suppression remained consistent across genders, cognitive reappraisal varied notably across age groups, course categories, cities, and geographical zones. Older students and postgraduate (PG) learners were more likely to engage in cognitive reappraisal to manage their emotions. Young adults in Hyderabad reported lower usage of cognitive reappraisal compared to peers in other Tier-1 cities, with Chennai surpassing Kolkata in this regard. Additionally, students native to the East Zone demonstrated less frequent employment of cognitive reappraisal than their counterparts in the West and South.

The use of expressive suppression as an emotion regulation strategy also exhibited regional variation, with students in Hyderabad reporting lower reliance than those in other cities.

Conversely, Chennai, Bangalore, and Pune showed higher tendencies toward expressive suppression compared to Mumbai.

Correlation analyses revealed that while cognitive reappraisal has a limited role in directly reducing anxiety and depression, it significantly enhances positive affect, psychological well-being, and overall mental health. Frequent application of cognitive reappraisal was associated with improved emotional and behavioural control, whereas heightened reliance on expressive suppression correlated with increased anxiety, depression, and loss of behavioural and emotional control, detrimental to emotional ties, life satisfaction, and psychological well-being.

In the post-COVID landscape, these patterns suggest that, despite the persistence of cultural and developmental influences on emotion regulation, the pandemic has exacerbated emotional vulnerabilities among young adults. Therefore, reinforcing adaptive strategies such as cognitive reappraisal and decreasing reliance on suppression are critical for fostering resilience and promoting mental health recovery in higher education settings. These insights underscore the necessity for tailored mental health interventions that consider demographic and regional differences. Implementing such strategies can enable stakeholders to create supportive environments conducive to positive mental health outcomes for students across diverse backgrounds.

Informed Consent

Informed consent was obtained from all participants involved in this study.

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Data Availability

The data supporting this study's findings are available from the corresponding author upon reasonable request.

Author Contributions Statement

K.S. (Kakollu Suresh): Conceptualization, Methodology, Software, Data Curation, Investigation, Visualization, and Original Draft Preparation.

A.P.H. (Ayesha Parveen Haroon) and S.D.J. (Salome Divya Joseph): Conceptualization, Methodology, Supervision, Software, Validation, and Reviewing and Editing.

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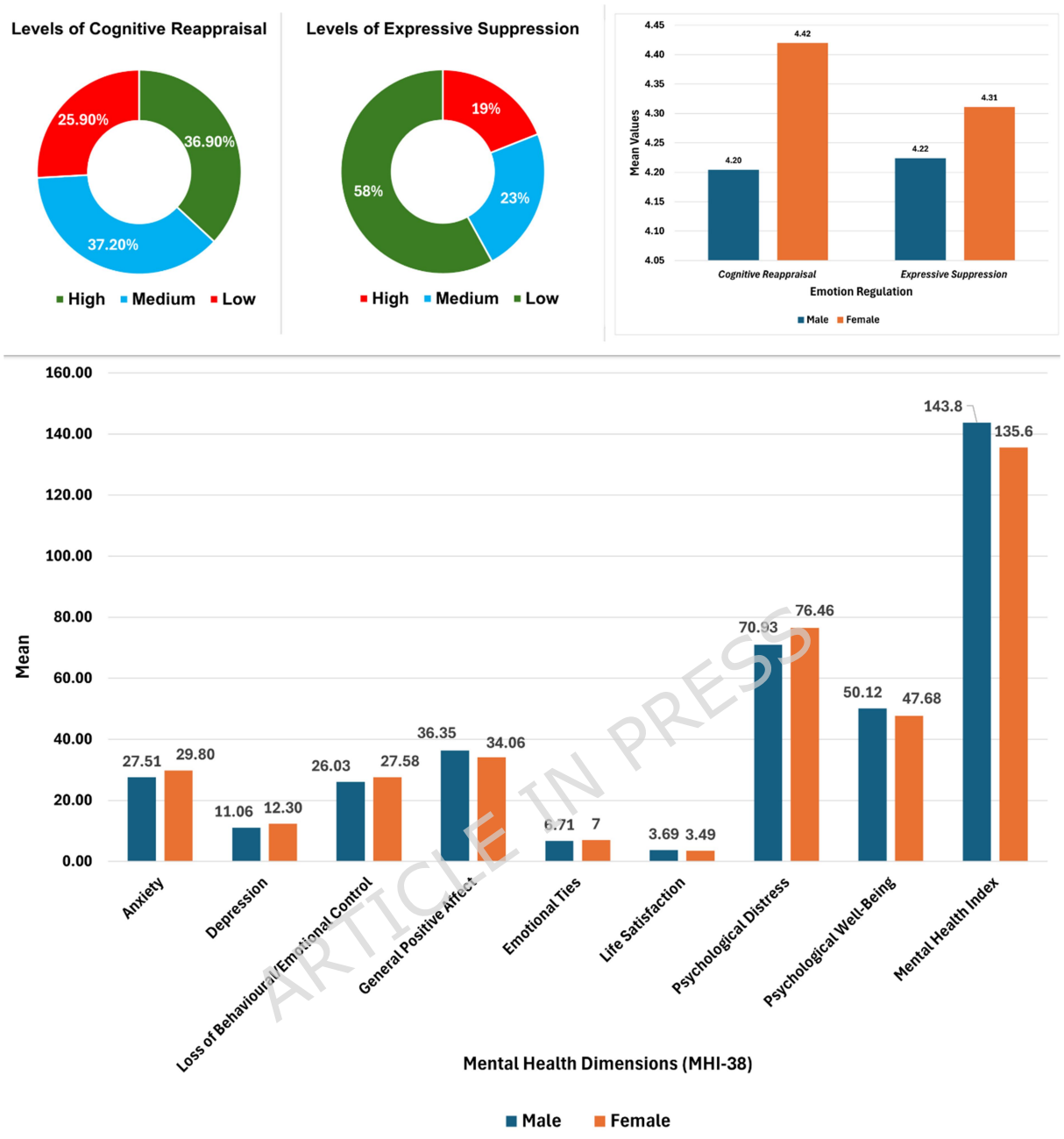

Fig.1 (a) *Levels of Emotion Regulation Strategies across the participants in the study, (b)Emotion Regulation Strategies,* (c) *Mental Health Dimensions across Genders*

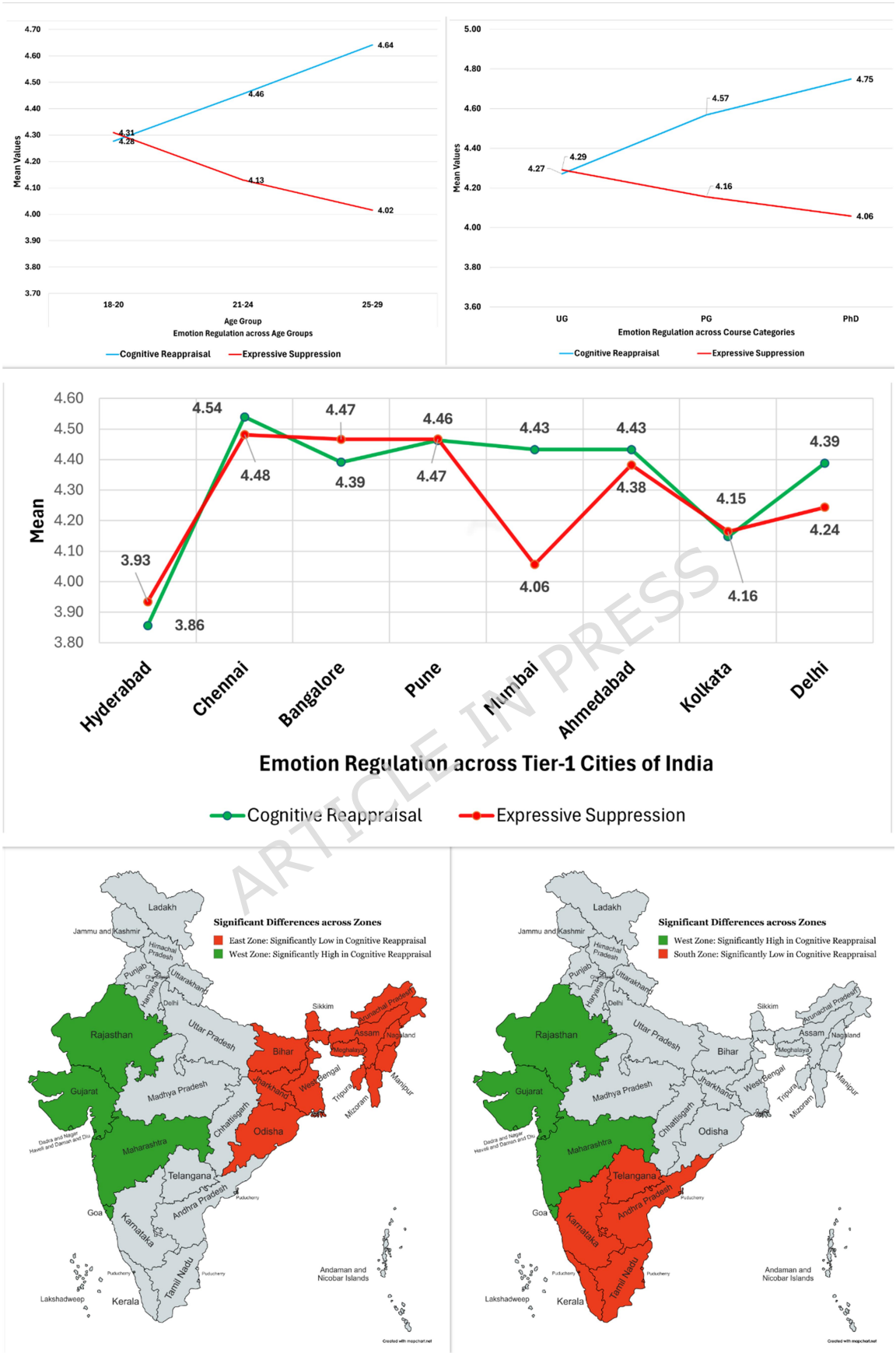

Fig.2 *Cognitive Reappraisal and Expressive Suppression across (a) Age Groups, (b)Course Categories, (c) Tier-1 Cities of India, (d) Zones of India (Maps generated by the authors*

using MapChart (https://www.mapchart.net/india.html), a web-based mapping tool, published under the Creative Commons Attribution 4.0 International license.)

Table 1. *Emotion Regulation and Mental Health Dimensions of Young Adult Students Across Gender Using t-test*

Emotion Regulation/Mental Health Dimension	Mean	Std. Dev	t	Correlation with CR	Correlation with ES	Emotion Regulation/Mental Health Dimension	Mean	Std. Dev	t	Correlation with CR	Correlation with ES
Cognitive Reappraisal						***Emotional Ties***				0.016	-.138**
Male	4.2	1.23	-3.68**			Male	6.71	2.79	-2.19*		
Female	4.42	1.13				Female	7	2.63			
Expressive Suppression						***Life Satisfaction***				0.004	-.123**
Male	4.22	1.32	-1.3			Male	3.69	1.31	3.18**		
Female	4.31	1.36				Female	3.49	1.21			
Anxiety				-0.022	.141**	***Psychological Distress***				-.051*	.164**
Male	27.5	7.52	-5.94**			Male	70.9	18.14	-5.9**		
Female	29.8	7.98				Female	76.5	19.52			
Depression				-0.034	.134**	***Psychological Well-Being***				.058*	-.164**
Male	11.1	3.82	-6.33**			Male	50.1	11.63	4.18**		
Female	12.3	4.05				Female	47.7	11.86			
Loss of Behavioural/Emotional Control				-.084**	.153**	***Mental Health Index***				.059*	-.190**
Male	26	7.32	-4.16**			Male	144	24.76	6.19**		
Female	27.6	7.81				Female	136	28.11			
General Positive Affect				.070**	-.145**						
Male	36.4	8.65	5.23**								
Female	34.1	8.98									

Abbreviations: Std. Dev = Standard Deviation; CR = Cognitive Reappraisal, ES = Expressive Suppression; ***Significance levels:*** *p < 0.05, **p < 0.01

Table 2. *ANOVA of Emotion Regulation across various demographic variables*

		Cognitive Reappraisal			Expressive Suppression		
Age Group	**N**	**Mean**	**Std. Dev**	**F**	**Mean**	**Std. Dev**	**F**
18-20	1294	4.28	1.18	4.32*	4.31	1.33	2.88
21-24	294	4.46	1.16		4.13	1.39	
25-29	40	4.64	1.38		4.02	1.43	
Course Category							
UG	1379	4.27	1.18	7.24**	4.29	1.34	1.19
PG	237	4.57	1.17		4.16	1.38	
PhD	12	4.75	0.98		4.06	1.11	
Institute City							
Hyderabad	258	3.86	1.42	8.51**	3.93	1.48	5.54**
Chennai	189	4.54	1.19		4.48	1.3	
Bangalore	242	4.39	0.99		4.47	1.22	
Pune	251	4.46	1.09		4.47	1.31	
Mumbai	191	4.43	1.14		4.06	1.42	
Ahmedabad	119	4.43	1.04		4.38	1.06	
Kolkata	160	4.15	1.22		4.16	1.41	
Delhi	218	4.39	1.1		4.24	1.31	
Zones of India							
North	267	4.4	1.14	5.28**	4.27	1.39	0.64
East	210	4.21	1.22		4.25	1.38	
West	472	4.47	1.1		4.34	1.28	
South	679	4.21	1.23		4.23	1.36	

Abbreviations: Std. Dev = Standard Deviation; ***Significance levels:*** *p < 0.05, **p < 0.01