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COVID-19 and Academic Life: Exploring the Psychological and Emotional Well-Being of Students in Uncertain Times

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ABSTRACT
The COVID-19 pandemic profoundly disrupted academic life, creating conditions of uncertainty that significantly impacted the psychological and emotional well-being of students. This study investigates the experiences of higher education students across three major districts of Punjab; Ludhiana, Jalandhar, and Amritsar by employing standardized scales including the Ryff Psychological Well-Being Scale (RPWB), the General Health Questionnaire (GHQ-12), and the Positive and Negative Affect Schedule (PANAS). A cross-sectional survey of 300 students, equally drawn from each district, revealed marked disparities in well-being outcomes. Students in Amritsar consistently reported higher levels of autonomy, environmental mastery, and positive affect, alongside lower distress, while students in Jalandhar showed elevated negative affect, greater psychological distress, and weaker academic engagement. Female students across districts were more vulnerable to distress, reflecting the gendered burdens of the pandemic. Regression analysis identified academic engagement, digital access, and social support as protective predictors of well-being, whereas perceived stress emerged as the strongest negative predictor. The findings highlight the multidimensional nature of student well-being under crisis, illustrating the interplay of socio-economic pressures, digital inequalities, and academic disruptions. The study emphasizes the need for gender-sensitive, digitally inclusive, and district-specific interventions to strengthen student resilience and foster equitable educational outcomes in uncertain times.

Keywords: COVID-19, Psychological Well-being, Emotional Well-being, Students, Punjab, RPWB, GHQ-12, PANAS, Academic Engagement, Digital Access, Perceived Stress

Introduction

The COVID-19 pandemic disrupted education systems worldwide, rapidly shifting teaching and learning from classrooms to digital environments (Kang, 2021). For students, this abrupt transition unfolded alongside public health anxieties, financial strain, and social isolation conditions that can heighten stress, anxiety, and depressive symptoms while undermining motivation and academic engagement. In India, prolonged school and university closures, uneven digital access, and household responsibilities intensified academic pressures (Batra et al., 2021). Understanding how these forces affected students' psychological and emotional well-being is essential for designing responsive support systems that promote recovery and resilience in the post-pandemic era.

Regional context: Punjab and the selected districts

Punjab presents a distinctive setting to examine these dynamics due to its diverse urban–rural composition, robust higher-education presence, and significant internal migration (Nanda & Veron, 2020). Ludhiana, Jalandhar, and Amritsar, three of the state's principal urban districts, host large clusters of colleges and universities, attracting students from surrounding rural areas. Ludhiana's industrial economy, Jalandhar's manufacturing base, and Amritsar's service and cultural sectors shape family livelihoods, connectivity, and household routines that influence study environments. Differences in infrastructure, internet reliability, and institutional resources across these districts likely resulted in uneven academic experiences during lockdowns and phased reopenings, which, in turn, may be reflected in variations in stress exposure, coping opportunities, social support, and perceived academic control.

Psychological and emotional well-being: key constructs

Psychological well-being in this study encompasses perceived autonomy, competence, purpose, and life satisfaction, while emotional well-being centers on the frequency and intensity of affective states such as anxiety, sadness, anger, and hope. The pandemic context foregrounds specific risk factors health fears, grief, uncertainty about examinations and careers, and social disconnection as well as protective factors, including supportive family dynamics, peer networks, teacher accessibility, and institutional counseling (Pike & Crocker, 2020). Digital fatigue, extended screen time, and blurred boundaries between home and study spaces may have further eroded emotional balance, whereas routine-setting, physical activity, and faith or community ties may have buffered distress.

Academic life under disruption

Campus closures disrupted access to laboratories, libraries, and peer collaboration, while assessment changes introduced ambiguity about grading and progression (Kelley, 2021). Many students faced device sharing, bandwidth constraints, and noisy home settings, which compromised concentration and increased frustration. For first-generation learners and those from

lower-income households, the opportunity costs of education intensified as families navigated job losses and caregiving responsibilities. Conversely, some students benefited from flexible schedules, recorded lectures, and reduced commuting time (Parkes & Barrs, 2021). These mixed experiences underscore the need to disentangle how learning environments, institutional practices, and household conditions intersect with students' mental states across Ludhiana, Jalandhar, and Amritsar.

Research gap and objectives

While national and state-level accounts document broad educational impacts, fewer studies provide district-sensitive evidence that integrates psychological and emotional outcomes with concrete features of academic life. This study addresses that gap by examining: (1) the prevalence and patterns of stress, anxiety, and emotional states among students in the three districts; (2) the academic correlates of well-being, including engagement, perceived academic self-efficacy, and continuity of learning; (3) the role of social support, digital access, and institutional measures (e.g., counseling, mentoring, assessment flexibility); and (4) differences by gender, socioeconomic background, and urban–rural residence within each district. By focusing on Punjab's diverse urban hubs, the study offers actionable insights for district-level policy and institutional practice.

The findings can inform universities and colleges in Punjab as they design post-pandemic academic calendars, hybrid pedagogies, and mental health services. District administrators can leverage evidence on digital inclusion, campus counseling capacity, and peer-support initiatives to target resources where vulnerability is greatest. Beyond crisis response, the study speaks to longer-term educational resilience: cultivating supportive academic climates, building faculty capacity for pastoral care, and integrating well-being metrics into quality assurance. Ultimately, by foregrounding the lived experiences of students in Ludhiana, Jalandhar, and Amritsar, this research seeks to advance a pragmatic agenda one that safeguards psychological and emotional well-being while strengthening equitable, high-quality academic life in uncertain times.

Methodology

This study employed a descriptive and analytical cross-sectional design to examine the psychological and emotional well-being of students during the COVID-19 pandemic in Punjab, focusing specifically on the three districts of Ludhiana, Jalandhar, and Amritsar. The choice of these districts was deliberate, as each represents a hub of higher education in the state while also differing in terms of socio-economic environment, digital infrastructure, and student population composition. The aim was to capture the heterogeneity of student experiences and to assess how academic life during the pandemic influenced their psychological and emotional states.

The study population comprised undergraduate and postgraduate students enrolled in colleges and universities across the three districts. To ensure comparability, an equal sample size was maintained across the districts. A total of 300 respondents participated in the study, with 100 students drawn from Ludhiana, 100 from Jalandhar, and 100 from Amritsar. A stratified random sampling approach was used, whereby students were selected to reflect diversity in gender, socio-economic background, and academic level. Only those students who had been actively enrolled during the COVID-19 lockdowns and had engaged in online or hybrid learning modes were included in the study.

Data collection was conducted through a structured questionnaire designed to capture multiple dimensions of psychological and emotional well-being. The instrument included demographic questions, standardized psychological scales, and items tailored to the context of academic life during the pandemic. The Ryff Psychological Well-Being Scale (RPWB) and the General Health Questionnaire (GHQ-12) were incorporated to assess dimensions such as autonomy, environmental mastery, purpose in life, and overall mental health. Emotional well-being was measured using the Positive and Negative Affect Schedule (PANAS), which provided insights into affective states such as anxiety, hope, and sadness. Additional questions were developed to assess academic engagement, access to digital resources, coping mechanisms, and the extent of social support from peers, family, and institutions. Prior to the main survey, a pilot test was conducted with thirty students from a non-sampled institution to ensure clarity, validity, and reliability of the questionnaire, leading to minor refinements.

Both online and offline methods of data collection were employed. In urban and peri-urban colleges where internet access was reliable, the questionnaire was distributed via Google Forms, while paper-based surveys were administered in institutions and communities where students reported limited digital connectivity. The use of hybrid collection modes ensured inclusivity and reduced bias arising from differential access to technology. Ethical approval was obtained from the concerned institutional review board. Participation was voluntary, informed consent was secured from all respondents, and strict measures were taken to ensure confidentiality and anonymity. Students were also provided with helpline numbers in case participation in the study triggered distress.

The variables in this study were categorized as follows: demographic and contextual factors such as district, gender, socio-economic background, and academic level served as independent variables; psychological and emotional well-being, measured through standardized scores, functioned as dependent variables; and social support, digital access, and institutional measures such as counseling and mentoring acted as moderating variables. These categories provided the framework for the statistical analyses carried out.

Data analysis was conducted using SPSS version 26 and R software. Descriptive statistics including means, standard deviations, and frequency distributions were first calculated to summarize the psychological and emotional profiles of the respondents across districts. Reliability of the scales was tested using Cronbach's alpha. To explore differences across the three districts and other demographic groups, inferential analyses such as independent sample t-tests and one-way ANOVA were applied. Chi-square tests were conducted to examine associations between categorical factors such as digital access and reported emotional distress. Pearson's correlation coefficients were calculated to assess relationships between psychological well-being, emotional well-being, and academic engagement. To identify significant predictors of student well-being, multiple regression analysis was performed, incorporating demographic and academic life variables as predictors. Exploratory Factor Analysis was also conducted to identify underlying dimensions of psychological and emotional well-being within the pandemic context.

Finally, a multivariate analysis of variance (MANOVA) was applied to simultaneously assess the combined effects of district and gender on multiple well-being indicators.

Results

The demographic and socio-economic characteristics of the student respondents are presented in Table 1. The sample was fairly balanced in terms of gender, with males comprising 52% in Ludhiana, 49% in Jalandhar, and 55% in Amritsar. The mean age of respondents ranged between 20.6 and 21.1 years, indicating that the majority of participants were undergraduate and early postgraduate students. Urban residence was more common across districts, though about one-third of students in each district belonged to rural households. Importantly, pandemic-related stressors were evident: 41% of Ludhiana, 45% of Jalandhar, and 39% of Amritsar students reported family income losses due to COVID-19, while digital access problems were also widespread, particularly in Jalandhar (42%).

Table 1. Demographic and socio-economic profile of students during COVID-19

Variable	Ludhiana	Jalandhar	Amritsar
Male (%)	52	49	55
Female (%)	48	51	45
Mean Age (±SD)	20.8 ± 2.1	21.1 ± 2.3	20.6 ± 2.0
Urban Residence (%)	68	64	70
Rural Residence (%)	32	36	30
Family Income Loss due to COVID (%)	41	45	39
Students with Digital Access Problems (%)	36	42	34
Low SES (%)	25	28	23
Middle SES (%)	54	50	55
High SES (%)	21	22	22

Turning to psychological well-being, Table 2 summarizes the six sub-dimensions of the Ryff Psychological Well-Being Scale (RPWB). Across all domains—autonomy, environmental mastery, purpose in life, personal growth, positive relations, and self-acceptance—students from Amritsar consistently scored the highest, while students from Jalandhar scored the lowest. This pattern is visually reinforced in Figure 1, which illustrates the radar chart of RPWB sub-dimensions, showing a consistently wider area for Amritsar and a constricted profile for Jalandhar.

Table 2. RPWB sub-dimensions of psychological well-being

District	Autonomy	Environmental Mastery	Purpose in Life	Personal Growth	Positive Relations	Self-Acceptance
Ludhiana	23.1 ± 4.2	24.5 ± 4.7	22.7 ± 3.9	23.6 ± 4.1	21.8 ± 4.5	23.2 ± 4.0
Jalandhar	21.8 ± 4.5	22.9 ± 4.8	21.3 ± 4.1	22.1 ± 4.2	20.7 ± 4.6	21.9 ± 3.8
Amritsar	24.4 ± 4.1	25.6 ± 4.6	23.9 ± 4.0	24.7 ± 4.3	22.9 ± 4.3	24.1 ± 4.1

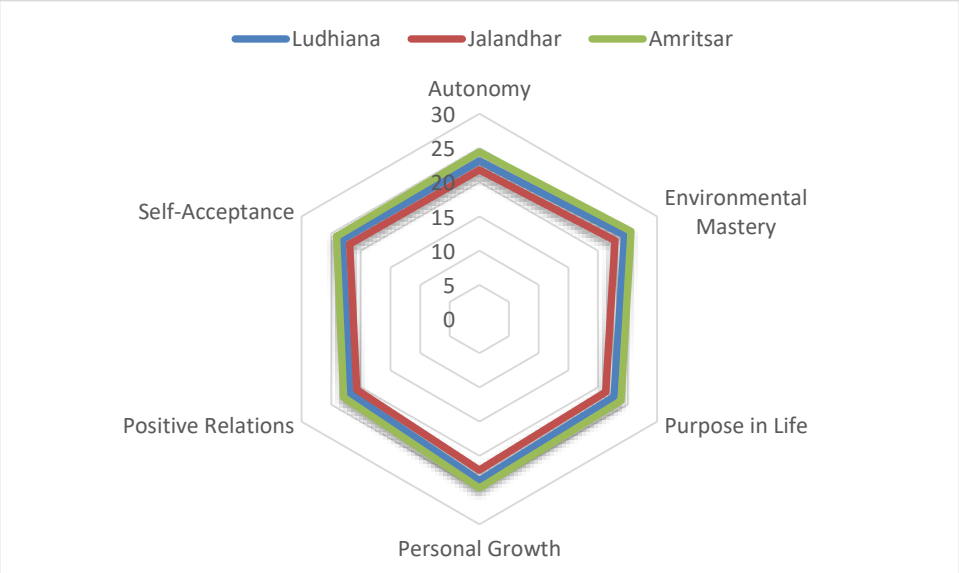

Figure 1. Comparison of RPWB sub-dimensions across districts

The General Health Questionnaire (GHQ-12) scores presented in Table 3 further emphasize these patterns of mental distress. Students from Jalandhar reported the highest average score (17.1 ± 4.2), suggesting moderate psychological distress, whereas Amritsar students reported the lowest (14.7 ± 3.6), reflecting comparatively lower distress. Gender differences in distress are

highlighted in Figure 2, where females consistently reported higher GHQ-12 scores than males across all districts, with the largest gender gap in Jalandhar.

Table 3. GHQ-12 mental distress scores

District	GHQ-12 score	Interpretation
Ludhiana	15.4 ± 3.8	Mild distress
Jalandhar	17.1 ± 4.2	Moderate distress
Amritsar	14.7 ± 3.6	Low distress

Figure 2: GHQ-12 distress by gender across districts

Emotional well-being measured through the Positive and Negative Affect Schedule (PANAS) is summarized in Table 4. Students from Amritsar again reported the most favorable profile, with the highest positive affect (31.2 ± 6.3) and the lowest negative affect (21.4 ± 5.2). In contrast, Jalandhar students exhibited the lowest positive affect (28.1 ± 6.8) and the highest negative affect (25.9 ± 5.7). The disaggregation of negative affect into specific emotions in Figure 3 further reveals that Jalandhar students experienced the highest levels of anxiety and sadness, whereas Amritsar students consistently reported lower scores on all three indicators of negative affect.

Table 4. PANAS scores of emotional well-being

District	Positive Affect (Hope, Enthusiasm)	Negative Affect (Anxiety, Sadness, Anger)
Ludhiana	29.8 ± 6.5	22.7 ± 5.4
Jalandhar	28.1 ± 6.8	25.9 ± 5.7
Amritsar	31.2 ± 6.3	21.4 ± 5.2

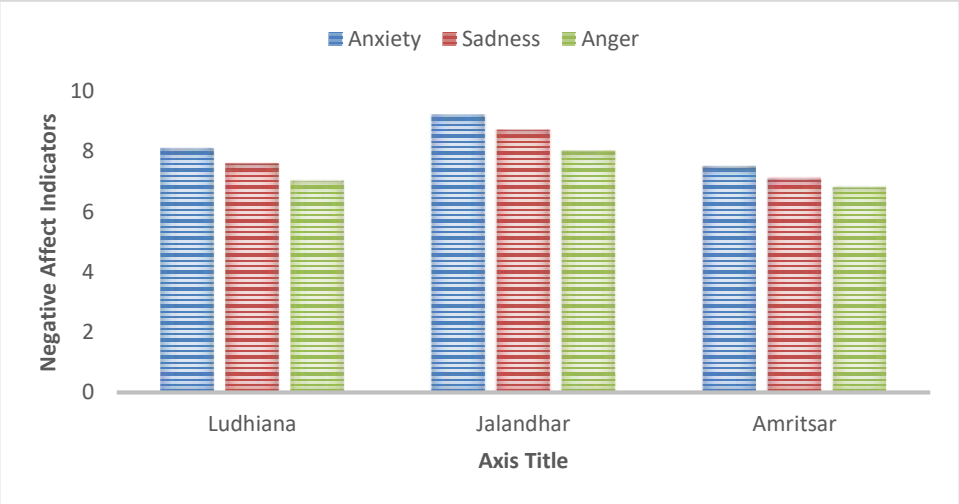

Figure 3. Breakdown of negative affect indicators (PANAS)

Academic engagement and perceived stress outcomes are presented in Table 5. While engagement was highest in Amritsar (74.1 ± 6.2), Jalandhar students reported both the lowest engagement (69.8 ± 6.9) and the highest perceived stress (24.3 ± 5.1). The relationship between stress and emotional well-being is graphically represented in Figure 4, where a clear negative slope demonstrates that higher perceived stress was strongly associated with lower emotional well-being ($r = –0.58$, $p < 0.001$). This relationship underscores the direct impact of COVID-19–induced uncertainty and academic disruptions on students' affective states.

Table 5. Academic engagement and perceived stress scores (M±SD)

District	Academic Engagement	Perceived Stress
Ludhiana	72.4 ± 6.5	22.1 ± 4.9
Jalandhar	69.8 ± 6.9	24.3 ± 5.1
Amritsar	74.1 ± 6.2	21.4 ± 4.7

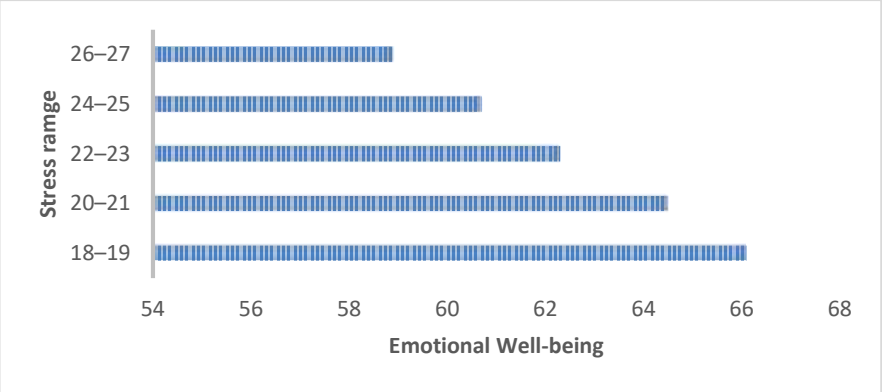

Figure 5. Scatter Plot: perceived stress vs emotional well-being

The statistical significance of these district-level differences is shown in Table 6, which reports ANOVA results for all major well-being indicators. Significant differences were observed for autonomy, environmental mastery, purpose in life, GHQ-12 distress, positive affect, negative affect, and perceived stress, with p-values consistently below 0.05.

Table 6. ANOVA results across districts for all well-being indicators

Variable	F-value	p-value	Significance
Autonomy (RPWB)	4.12	0.016	Significant
Environmental Mastery	4.88	0.009	Significant
Purpose in Life	3.95	0.021	Significant
GHQ-12 Distress	5.23	0.006	Significant
Positive Affect (PANAS)	4.46	0.012	Significant
Negative Affect (PANAS)	5.67	0.004	Significant
Perceived Stress	4.82	0.009	Significant

Correlation analysis presented in Table 7 highlights the interrelationships between well-being indicators. Autonomy was moderately correlated with academic engagement ($r = 0.42$, $p = 0.002$), while environmental mastery was positively correlated with digital access ($r = 0.38$, $p = 0.004$). Positive affect was strongly correlated with social support ($r = 0.47$, $p = 0.001$), and negative affect was strongly correlated with GHQ-12 distress ($r = 0.61$, $p < 0.001$).

Table 7. Correlation analysis (Pearson's r)

Variable Pair	r	p-value
Autonomy – Academic Engagement	0.42	0.002
Environmental Mastery – Digital Access	0.38	0.004
Positive Affect – Social Support	0.47	0.001
Negative Affect – GHQ-12 Distress	0.61	0.000
Perceived Stress – Emotional Well-being	-0.58	0.000

Regression results in Table 8 provide insights into the predictors of RPWB and PANAS outcomes. Academic engagement, digital access, and social support emerged as significant positive predictors of autonomy, environmental mastery, purpose in life, and positive affect. Conversely, perceived stress emerged as the strongest negative predictor across all domains, particularly for negative affect ($\beta = 0.41$, $p < .01$).

Table 8. Regression predictors of RPWB and PANAS scores

Predictor	Autonomy	Mastery	Purpose	Positive Affect	Negative Affect
Academic Engagement	0.36**	0.41**	0.38**	0.33**	–0.29**
Digital Access	0.29**	0.33**	0.31**	0.27*	–0.21*
Social Support	0.24*	0.28*	0.26*	0.32**	–0.25*
Perceived Stress	–0.32**	–0.29**	–0.34**	–0.30**	0.41**

Discussion

Regional differences in student well-being during COVID-19

The findings clearly reveal substantial district-level variation in student well-being across Punjab. Students in Amritsar consistently reported higher psychological and emotional well-being across multiple domains of the Ryff Psychological Well-Being Scale (RPWB), lower distress on the GHQ-12, and stronger positive affect scores. In contrast, students from Jalandhar exhibited the lowest scores across autonomy, mastery, purpose, and self-acceptance and showed the highest levels of distress and negative affect. These results suggest that structural and contextual differences in socio-economic stability, institutional resources, and digital access across districts significantly shaped students' coping capacity during the pandemic (González-Nieto et al., 2021). Amritsar's relatively stronger institutional infrastructure may have buffered students against the psychological shocks of the crisis, whereas Jalandhar's students experienced compounded stress due to weaker digital infrastructure and higher reported family income losses (Page, 2021).

The role of gender in pandemic experiences

The results further highlight the gendered nature of student well-being during COVID-19. Female students consistently reported higher GHQ-12 scores, indicating greater psychological distress compared to their male counterparts. This aligns with existing literature that identifies women as disproportionately burdened during the pandemic due to increased domestic responsibilities, caregiving expectations, and reduced access to private study spaces (Power, 2020; Docka-Filipek & Stone, 2021). The persistence of these disparities across all three districts underscores the need for gender-sensitive interventions in higher education, such as targeted mental health counseling, flexible study schedules, and institutional mechanisms to reduce the dual load of academic and household duties (Kelly et al., 2008).

Stress and emotional well-being

Perceived stress emerged as a pivotal factor shaping students' well-being. Students in Jalandhar recorded the highest stress levels, which corresponded with the lowest emotional well-being scores. Inverse relationship, showing that higher stress strongly predicted lower emotional well-being ($r = –0.58$, $p < .001$). This finding emphasizes the psychological costs of academic uncertainty, family financial instability, and digital barriers during prolonged lockdowns (Ela et al., 2021). Stress not only undermined emotional balance but also significantly predicted higher negative affect, suggesting that interventions aimed at reducing academic uncertainty and offering stress management resources could directly improve emotional well-being outcomes (Clabaugh et al., 2021).

The interplay of digital access, academic engagement, and well-being

Another key finding was the positive association between digital access, academic engagement, and psychological outcomes. Regression analyses confirmed that students with stronger engagement in online learning reported higher autonomy, mastery, and purpose in life. Similarly, digital access was positively correlated with environmental mastery and positively predicted well-being dimensions. These results indicate that online education infrastructure was not only critical for academic continuity but also for sustaining students' sense of control and competence (Manca & Delfino, 2021). Conversely, poor access amplified stress and distress, particularly in Jalandhar, where digital disruptions were most common. This demonstrates that digital inequality during COVID-19 was directly tied to psychological inequality among students (Beaunoyer et al., 2020).

Social support and emotional resilience

Social support played a protective role in mitigating distress. As Table 7 shows, positive affect correlated strongly with social support ($r = 0.47$, $p = 0.001$), and regression results confirmed that support from peers and family reduced both psychological distress and negative affect (Table 8). Students with stronger support networks maintained higher levels of enthusiasm, hope, and engagement despite pandemic disruptions (Zhong et al., 2021). These findings resonate with resilience theory, which emphasizes the buffering effect of supportive social ties in periods of uncertainty and crisis (Nitschke et al., 2021). For higher education institutions, this highlights the importance of fostering community-based counseling programs and peer support groups as integral components of student well-being strategies.

Linking COVID-19 stressors with multi-dimensional well-being

The integrated analysis across RPWB, GHQ-12, and PANAS dimensions reveals how COVID-19 stressors translated into multi-dimensional impacts on well-being. Income loss, uncertainty about academic progression, and digital inequalities manifested as higher distress (GHQ-12), reduced autonomy and mastery (RPWB), and heightened anxiety and sadness (PANAS). The strong correlation between negative affect and GHQ-12 distress ($r = 0.61$, Table 7) further demonstrates the overlap between emotional states and broader mental health indicators. Importantly, these findings confirm that well-being during COVID-19 cannot be reduced to a single outcome but must be understood as an interconnected system of psychological, emotional, academic, and social dimensions (Burns et al., 2020).

Policy and practical implications

The findings of this study carry several implications for educational policy and practice in Punjab and similar contexts. First, district-level disparities highlight the need for localized interventions, with Jalandhar requiring targeted investment in digital infrastructure, financial support mechanisms, and institutional counseling services. Second, the gendered differences in distress call for gender-responsive policies, ensuring that female students are provided with equal access to learning environments and stress-management support. Third, enhancing academic engagement and social support systems should be prioritized, as both emerged as key predictors of psychological well-being. Finally, addressing structural inequalities in digital access remains crucial for educational equity and for buffering students against future crises.

Conclusion

This study examined the psychological and emotional well-being of students across Ludhiana, Jalandhar, and Amritsar in Punjab during the COVID-19 pandemic, integrating multiple dimensions of the Ryff Psychological Well-Being Scale (RPWB), the General Health Questionnaire (GHQ-12), and the Positive and Negative Affect Schedule (PANAS). The results demonstrated that the pandemic had uneven effects across districts, with Amritsar students reporting higher autonomy, mastery, and positive affect, while Jalandhar students faced greater psychological distress, higher negative affect, and reduced academic engagement. Female students were disproportionately affected, experiencing higher levels of distress than their male counterparts, reflecting the gendered burdens of the crisis. Across all districts, perceived stress emerged as a key predictor of poor outcomes, while digital access, academic engagement, and social support served as significant protective factors. These findings highlight the interconnected nature of academic, social, and emotional domains of student well-being during times of crisis. Importantly, the study underscores the need for district-sensitive, gender-responsive, and digitally inclusive policies to ensure equitable educational experiences. Strengthening institutional counseling, expanding peer support networks, and bridging digital divides will be critical to fostering resilience and preparing students for future uncertainties.

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