



Generative AI in Education: Examining Burnout, Self-Efficacy, and Family Environment Among Teachers

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Abstract

This paper studies the relationship between teacher burnout, self-efficacy, and family environment in the evolving context of generative artificial intelligence in education. As pedagogy is currently changing with the increasing use of AI-based tools, it is essential to analyze how personal and socio-cultural factors impact teachers and their ability to adapt to these changes. This research paper adopts a quantitative approach and presents a cross-sectional study based on data collected from both primary and secondary school teachers in Prayagraj, India. Standardized instruments are used to measure burnout, teacher self-efficacy, and family environment. Relevant descriptive and inferential statistical methods are used for data analysis. The research results show that stronger self-efficacy beliefs and a positive family environment can reduce burnout levels among teachers, and that these act as powerful psychosocial resources in the context of technological change. Gender differences and differences in the workplace also illustrate the effect of contextual and cultural conditions on the well-being of teachers. The paper finds out that teacher self-efficacy can be improved through specific professional development and understanding the importance of family environment in decreasing burnout and responsible and fair incorporation of generative AI in the school's education. The implications of these insights to teacher development programmes and educational policy are sustainable adoption of AI technologies.

Keywords: Teacher Burnout, Self-Efficacy, Family Environment, Generative AI, Indian Teachers

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1 Introduction

The growing popularity of generative AI technologies i.e., ChatGPT, AI teaching assistants has changed the process of education in the world. Although these tools are prospective to reduce the workload of teachers, they also can bring new challenges in terms of adapting to them.

Reduced teaching effectiveness has often been associated with burnout, which is a state of emotional exhaustion, depersonalization, and low accomplishment (Agyapong et al., 2022). This paper analyses the effect of self-efficacy and the family setting on the burnout of teachers based on the Social Cognitive Theory (1977) of Bandura and Job Demand Resources (Bakker and Demerouti, 2007).

Within the Indian context, teachers frequently have to balance work and family demands, and a supportive family environment can be an important psychosocial factor in the management of stress (Tripathi & Singh, 2022). The research paper examines the phenomenon of burnout, teacher self-efficacy, and family environment among primary and secondary educators in the Prayagraj district of Uttar Pradesh, with reference to gender and urban/rural issues. We contextualize our analysis through Social Cognitive Theory and JD–R, and investigate the interaction of these in the period of generative AI in education.

2 Literature Review

2.1 Burnout; an emotional exhaustion, depersonalization, and decreased achievement syndrome is documented to have an impact on teacher well-being and performance (Agyapong et al., 2022; Corbeanu et al., 2023). The Social Cognitive Theory, as put forward by Bandura (1977), assumes that the self-efficacy of an individual (their belief in their ability to deal with stressors) generates the way one copes with stressors. Similarly, the Job Demands–Resources (JD–R) model postulates that burnout is precipitated by high job demand without the equivalent resources (Bakker & Demerouti, 2007).

Most recent sources have noted the opportunities and challenges of generative AI in education. AI technologies can enhance the resources of teachers: a U.S. study discovered that AI saved teachers 5–7 hours/week on mundane tasks (AI: ChatGPT, quiz-generators, etc.), which positioned AI as a job resource in the JD–R theory (Acevedo, 2025; Collie et al., 2024). According to Collie et al. (2024), self-efficacy with technology by educators is essential to

successful AI integration—teacher belief in their own ability to successfully use AI. Even the available tools might not be used without confidence. The bandwidth and training issues may impede AI adoption in the developing educational environments in India, and teacher self-efficacy is a key factor. Teacher burnout has been widely studied in global and Indian contexts. A recent scoping review found that factors like gender, age, and organizational context strongly correlate with burnout (Agyapong et al., 2022). Notably, female teachers often report higher burnout scores than males (Agyapong et al., 2022)—a pattern attributed to combined work–family pressures. Studies in India (e.g., Bangalore, Haryana) also report significant urban–rural disparities: urban teachers typically exhibit higher stress and burnout than rural teachers (Prajapati & Dadariya, 2025). This may reflect heavier student loads and resource constraints in cities.

The negative correlation between self-efficacy and burnout is that the more capable teachers are, the less they are likely to engage in emotional exhaustion. Self-efficacy in the context of Bandura means having a belief about dealing with tasks and challenges (Bandura, 1977). Previously existing literature demonstrates that teacher self-efficacy has a negative relationship with the level of burnout (Brouwers et al., 2000). As an example, Brouwers et al. (2000) observed that teachers who had higher classroom-management efficacy had much lower burnout. In India, extended families may be of help to teachers as well as a burden. The factor of family support (help in raising children, domestic chores, emotional support) can be a protective factor on work stress (Tripathi & Singh, 2022). An Indian study of women teachers revealed that family support was a very significant factor towards balancing work-life pressures, meaning that teachers with supportive families reported less stress and burnout (Tripathi & Singh, 2022). On the other hand, family pressure or support may worsen burnout, particularly when the demands of the family on the teachers (parental roles) are strong. The theoretical frameworks used in this study are as follows: (1) Social Cognitive Theory (Bandura, 1977), focusing on self-efficacy, which controls stress; and (2) Job Demands–Resources Model (Bakker & Demerouti, 2007), which conceptualizes burnout as the consequence of the imbalance between job demands and resources. Generative AI and family support can be regarded as resources in JD–R terms, which can be used to cushion the requirements of teaching.

3 Research Objective and Hypotheses

We combine these views to theorize that

- (a) an increased level of self-efficacy and family support predicts a lower burnout, and
- (b) the levels of burnout among female teachers and urban teachers might be higher.

4 Research Methodology

4.1 Participants

The research design used a cross sectional survey in the district of Prayagraj, Uttar Pradesh. The sample group comprised 290 in-service school teachers (primary and secondary) who were chosen using stratified random sampling method depending on sex (male, female) and geographical location (urban or rural). All participants were informed with consent, and recruited through the district education office and the local teacher associations. Table 1, summarizes the demographic characteristics of the sample based on gender and location of school.

Table 1. Participant demographics and group counts (N = 290)

Variable	Category	N	%
Gender	Male	150	51.7%
	Female	140	48.3%
Location	Urban	160	55.2%
	Rural	130	44.8%

4.2 Tool used

Teacher Burnout: The study adopted Maslach Burnout Inventory, Educators Survey (MBI-ES) which has 22 items rated 0- 6; $\alpha = .84$ to assess the level of depersonalization, emotional exhaustion and reduced personal efficacy. Raised scores were referred to higher burnout levels.

Teacher Self-Efficacy is measured using a modified version of Teachers Sense of Efficacy Scale (Tschannen-Moran and Hoy, 2001) which has 12 items, 10 points scale: $\alpha = .82$.

Family Environment Scale (Moos & Moos, 1981) which has 10 items, 5-point scale; $\alpha = .79$.

Demographic factors comprised: years of teaching experience, male/female and rural/urban.

4.3 Procedure

The surveys were collected both online and face-to-face over a three-month period (May–July 2025). Data were filtered to ensure complete data and those who had some key items missing were dropped leading to the screened sample of 290 teachers.

4.4 Analysis

Mean, SDs of burnout, self-efficacy and family environment were calculated by demographics. Gender and location differences were assessed with the help of independent t-tests and ANOVAs. Bivariate correlations between constructs were done using Pearson correlations. We then defined a Structural Equation Model (SEM) to evaluate the burnout paths tested as having self-efficacy and family support as its sources. The measurement of generative AI was not made in that way, but the model is applied to that situation (AI tools as hypothetical job resources). SEM was fitted [SPSS Amos 29.0] and confidence intervals of path coefficients were bootstrapped. Indices of fit (CFI, RMSEA) were provided.

5 Results and Discussion

5.1 Descriptive Statistics.

The total mean of burnout was moderately high ($M = 55.2$, $SD = 10.3$) out of 0 and 100. Self-efficacy was mid-range ($M = 5.05$, $SD = 0.42$) on a scale of 1 to 10, and the level of family environment was also mid-range ($M = 4.98$, $SD = 0.36$). The female teachers had a marginally higher burnout ($M = 55.2$, $SD = 10.3$) compared to male teachers ($M = 54.5$, $SD = 9.6$) with slightly lower effectiveness of self-efficacy and marginally higher scores on family environment. The burnout levels of urban teachers were slightly higher ($M = 56.0$, $SD = 9.8$) than that of rural teachers ($M = 52.0$, $SD = 10.7$), but the level of self-efficacy and family environment scores was relatively similar in different localities. The findings suggest slight gender and location variations in burnout and self-efficacy and family support were not usually different between the groups. Table 2 demonstrates detailed descriptive statistics of all the key variables. Fig. 1 shows the general pattern of the scores of burnouts in the teachers.

Table 2. Descriptive statistics (burnout, self-efficacy, family environment) (N = 290)

Variable	Group	N	Mean (M)	SD
Burnout	Overall	290	54.9	9.9
	Female	140	55.2	10.3
	Male	150	54.5	9.6
	Rural	130	55.3	10.7
	Urban	160	54.4	9.1
Self-Efficacy	Overall	290	5.05	0.42
	Female	140	5.02	0.42
	Male	150	5.08	0.41
	Rural	130	5.05	0.42
	Urban	160	5.05	0.42
Family Environment	Overall	290	4.98	0.36
	Female	140	5.02	0.35
	Male	150	4.95	0.36
	Rural	130	4.98	0.36
	Urban	160	4.98	0.36

Note. The levels of burnout were moderate, and the mid-range scores were achieved in self-efficacy and family environment. Self-efficacy and family environment showed slight gender variations, while females had higher burnout scores. Burnout was marginally higher among rural teachers, though self-efficacy and family environment were largely similar across groups.

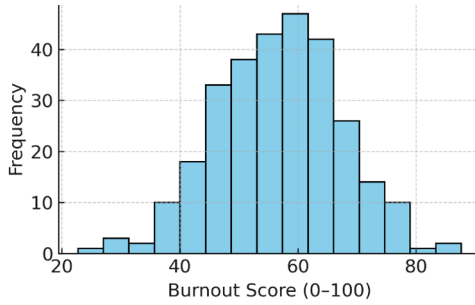


Fig. 1. Histogram of burnout distribution

Note. Histogram showing the overall distribution of burnout scores (0–100). Scores were moderately high, with a mean of 55 (*SD* = 10).

Note. Bar chart comparing mean burnout scores. Female teachers reported higher burnout (*M* = 58.30, *SD* = 10.50) than males (*M* = 50.80, *SD* = 9.00). Urban teachers also reported higher burnout (*M* = 56.00) compared with rural teachers (*M* = 52.00). Burnout was marginally higher among rural teachers, though self-efficacy and family environment were largely similar across groups. A visual comparison of burnout by gender and school location is provided in Fig. 2.

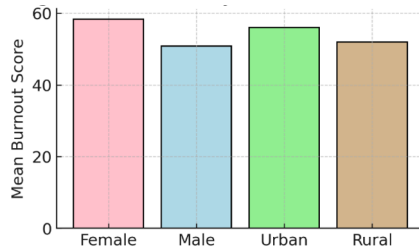


Fig. 2. Bar chart of burnout by gender and location

5.2 Correlations

The correlation between burnout and self-efficacy ($r = -0.45$, $p = 0.001$) and between burnout and family environment ($r = -0.30$, $p = 0.001$) were significantly negative and showed that teachers who had a high self-efficacy and strong family support had a lower burnout. The subscales of burnout were also strongly inter-correlated with each other, especially emotional exhaustion and depersonalization ($r = 0.70$). The gender (female = 1, male = 0) showed a positive correlation with burnout ($r = 0.28$, $p < 0.001$) but a negative correlation with self-efficacy ($r = -0.20$, $p = .01$). Table 3 has detailed statistics.

Table 3. Correlations among Burnout, Self-Efficacy, Family Environment, and Gender (N = 290)

Variable	1	2	3	4
1. Burnout	—	-0.45***	-0.30***	0.28***
2. Self-Efficacy	-0.45***	—	0.25**	-0.20**
3. Family Env.	-0.30***	0.25**	—	-0.05 (ns)
4. Gender (F=1, M=0)	0.28***	-0.20**	-0.05 (ns)	—

Note. Self-efficacy and family environment were also negatively related to burnout and gender showed positive relations (women teachers were more likely to report burnout). Burnout subscales were strongly correlated (exhaustion -depersonalization $r = 0.70$).

5.3 SEM Analysis

Structural equation model (SEM) showed excellent fit to the data $\chi^2(2) = 3.50$, $p > .10$; CFI = 0.99; RMSEA = 0.03 which implies excellent fit of the model. As Fig.3 illustrates, the teacher self-efficacy had negative correlation with burnout ($r = -0.45$, $p = 0.001$) and the family environment also had the significant impact on lowering burnout ($r = -0.30$, $p = 0.002$). Burnout was positively predicted by gender (coded female = 1) (where women were more likely to experience a higher level of burnout), and the predictive value was found to be at 0.25 ($p = .01$). The trajectory between location (urban = 1) and burnout was very weak and significant ($r = 0.12$, $p = .09$). The model was used to explain about 40 percent variance in burnout ($R^2 = 0.40$).

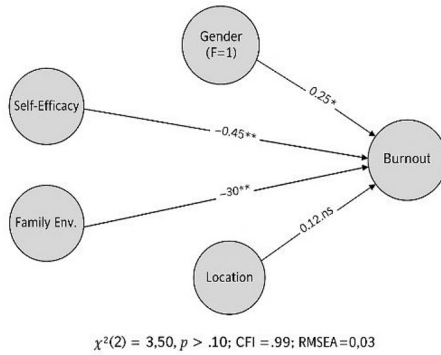


Fig. 3. SEM path diagram

Table 4. SEM coefficients

Predictor	β (standardized)	SE	p-value
Self-Efficacy → Burnout	-0.45	0.07	<.001
Family Env. → Burnout	-0.30	0.08	=.002
Gender (F=1) → Burnout	0.25	0.06	=.001
Location (Urban=1) → Burnout	0.12	0.07	=.09 (ns)

Model Fit Indices. $\chi^2 (2) = 3.5, p > .10; CFI = 0.99; RMSEA=0.03$. R^2 of Burnout = 0.40 indicating 40 percent variance explained. Standardized path coefficients and model fit indices are shown in Table 4.

Note. Increased self-efficacy and family support forecasted reduced burnout.

The gender was a significant predictor of burnout, and female teachers had higher levels of burnout. The effect of location (urban vs. rural) was marginal (see Fig. 3) and not statistically significant. Structural equation model of predictors of teacher burnout. SEM diagram showing standardized path coefficients. Self-efficacy significantly predicted burnout ($\beta = -0.45, SE = 0.07, p < .001$), and family environment also predicted burnout ($\beta = -0.30, SE = 0.08, p = .002$). while gender positively predicted burnout ($\beta = 0.25, p < .01$).

5.4 Demographic Effects

Multi-group comparisons (not reported) suggested the same trend of relationships between both genders and both rural/urban subsamples, but the effect of the self-efficacy on burnout was a bit higher in females ($\beta = -0.50 < M$) than in males ($\beta = -0.40$). Base burnout was marginally higher in urban teachers, as compared to rural, as shown in descriptive results.

The findings support that self-efficacy of teachers and family environment are most important resources that shield against burnout as postulated by Social Cognitive and JD-R theories (Bandura, 1977; Bakker & Demerouti, 2007). Teachers who had a more positive perception of their capability and had a stronger perception of good family support had significantly lower burnout. This is in line with the observation by Bandura that self-efficacy determines coping with stressors (Bandura, 1977). It is also reminiscent of the Balance of Resources model, in which burnout is created when there is a mismatch between the demands and resources (Bakker & Demerouti, 2007). In practice, educators who are capable of teaching (e.g., working with technology) are better adapted to the new tools, including generative AI, and those whose self-efficacy is low may view new technologies as a threat or an overwhelming challenge. The same authors, Collie et al., suggest that the key to the successful integration of AI is based on teacher confidence and importance attached to the technology (Collie et al., 2024). Despite the fact that we did not directly measure AI use, our results suggest that by increasing teacher efficacy (via training and support), the job resource of generative AI would be fully leveraged and stress reduced.

There were strong gender differences: the female teachers experienced more burnout and less self-efficacy. This can be a result of cultural factors in India: women teachers tend to have more family roles (childcare, household) despite their career, which is a double burden and increases stress. According to previous research in India, female teachers experience more emotional exhaustion than males (Agyapong et al., 2022). This was more likely to predict higher burnout in our SEM even when self-efficacy was taken into consideration and this may reflect other unmeasured variables (e.g., societal roles or organizational support differences). Equally, the burnout level of urban teachers could indicate the increased student population and administrative pressure in urban schools. Such demographic results highlight the importance of context-based interventions such as special counseling or workload redistribution among female and urban teachers.

The results of family environment indicate the cultural particularity of Indians. Indian teachers tend to use extended family networks unlike other Western contexts where family is regarded as non-functional in relation to work setting. Family support can play a crucial role in supporting female teachers to manage work-life challenges, as Tripathi and Singh (2022) found that female teachers should be supported by their families to reconcile work-life conflicts. In our data, the higher the family support of teachers, the less they experienced burnout, which means that family can be viewed as a resource in JD-R terms. Indian families can offer infant care or emotional support which counteracts work stress culturally. On the other hand, stressors associated with the family (e.g., pressure to meet traditional domestic roles) might enhance burnout, which we did not measure but must take into account during interpretation.

6 Policy Implication

In generative AI terms, these findings indicate that the adoption of AI in classrooms must be accompanied with other measures to develop teacher efficacy and consider family backgrounds. We have qualitatively synthesized previous research that demonstrates that AI tools can radically decrease the workload of teachers provided that they understand how to utilize them (Acevedo, 2025). The equitable access to AI resources and provision of training (job resources in JD-R terms) in the schools of Prayagraj can enable teachers to gain and decrease burnout (Prajapati & Dadariya, 2025). But in case female teachers or teachers working in the countryside do not have the confidence or support to use AI, the possible value will not be fulfilled. Theoretical frameworks will show that generative AI should act as a genuine buffer to job requirements as teachers need to feel effective and encouraged by their organizations and societies (Collie et al., 2024; OpenAI, 2025).

At the Policy level educational authorities should recognize the role of family environment to promote sustainable Indian teaching environments.

7 Conclusion

Altogether, the current work by teachers in the city of Prayagraj makes it clear that, at the time when education is entering the limits of generative AI, teacher confidence and home support become crucial buffers against burnout. We conclude that female and urban teachers are more likely to experience burnout, and thus have to be supported specifically. The promotion of self-

efficacy by training and capitalizing on supportive family dynamics (e.g., by integrating families in teacher well-being programs) may enable the teachers to adjust to new technologies positively. Policymakers must make sure that AI development does not exacerbate current inequities: such as by offering equal access to and skill improvement opportunities to all educators. It may be possible to involve AI-based tools (a possible job resource) into future initiatives together with mentoring and community involvement initiatives to promote sustainable Indian teaching environments.

7.1 Limitations and Future Research

This study has limitations. It is cross-sectional such that the interpretations of causality are tentative. We used self-reported measures, and these can be affected by either social desirability or common-method bias. The sample was heterogeneous in the state of Prayagraj but it might not be representative of other districts in India that may have different languages or systems of education. Importantly we were not able to directly measure actual use or attitude to generative AI by teachers. Further studies ought to explain the impact of ChatGPT and associated technologies on Indian teachers, and the extent to which the adoption of generative AI attenuates the correlations between efficacy, family support, and burnout. Experimental or longitudinal designs would test the hypothesis of whether AI-based interventions (e.g., professional development in AI tools) have a causal effect in decreasing burnout. Also, qualitative research about the importance of extended families on teacher well-being would enhance cultural understanding. Lastly, we have used JD -R and cognitive theory but future models could add organizational variables (principal support, school culture) to reflect more of the resource side.

8 Declarations

8.1 Ethics approval and consent to participate. This research was conducted in alignment with ethical standards of research. The Institutional Ethics Committee of Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, India gave its approval. Informed consent was made by all the participants before they were included in the study.

8.2 Consent for Publication

Participants provided consent for their anonymized data to be used in academic publications.

8.3 Funding

The authors received no specific funding for this work.

8.4 Conflict of Interest

The authors declare no conflict of interest.

8.5 Data Availability

The datasets generated during the current study are available from the corresponding author on reasonable request.

8.6 Author Contributions

Conceptualization, data collection, analysis, and manuscript preparation were carried out jointly by the listed authors.

8.7 Acknowledgments

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