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Academic stress, coping behaviour, and institutional support among Ph.D. agricultural research scholars: Evidence from Indian Agricultural Universities

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Abstract

The present study examined academic stress and coping mechanisms among Ph.D. agricultural research scholars at Govind Ballabh Pant University of Agriculture and Technology (GBPUAT), Pantnagar, and ICAR–Indian Agricultural Research Institute (IARI), New Delhi. The study was conducted with 166 doctoral scholars selected through simple random sampling from different agricultural disciplines. Data were collected through a structured questionnaire based on the Modified Perceived Stress Scale and Brief COPE Scale to assess levels and coping behaviour of the respondents. The results showed that the majority of the respondents experienced moderate levels of academic stress (66.67%) and moderate coping behaviour (70.83%). Career uncertainty was identified as the major source of stress, followed by publication pressure, difficulty in completing research work within the stipulated time, inadequate guidance, limited research resources and delays in fellowship disbursement. A large proportion of respondents reported that academic workload and research-related responsibilities were stressful and demanding. Respondents commonly adopted coping strategies such as participating in relaxation activities, maintaining a positive outlook, seeking guidance from supervisors and receiving emotional support from friends and family members. At the same time, a few respondents also relied on avoidance-based coping strategies. Correlation analysis revealed a low positive but statistically non-significant association between perceived academic stress and coping mechanisms among doctoral scholars. The findings suggest the need to strengthen institutional support systems by providing effective mentoring, stress management programmes, career counselling services, timely fellowship disbursement and better research facilities in order to improve the well being and productivity of doctoral scholars.

Keywords: Coping behaviour, perceived stress, academic workload, stress management

Introduction

Doctoral education is considered one of the most challenging phases of academic life. Unlike undergraduate or postgraduate studies, Ph.D. programmes require scholars to work independently while balancing research responsibilities, academic expectations, publication requirements and personal responsibilities. Therefore, stress among doctoral researchers has become a growing concern in higher education institutions worldwide.

Academic stress refers to the emotional and psychological pressure experienced when academic demands exceed an individual's capacity to manage them effectively. In agricultural universities and research institutions, this stress is often more intense because of the unique nature of agricultural research. Field experiments largely depend on environmental and climatic conditions, and research outcomes may be influenced by crop failure, unpredictable weather, delays in laboratory analysis, shortage of resources, or financial constraints. These uncertainties make agricultural research highly demanding

and may increase emotional and mental strain among research scholars.

Doctoral scholars are expected to maintain high academic performance, publish research papers, complete research work within fixed timelines, and contribute to scientific advancement. Constant pressure to fulfil these expectations can negatively affect mental well-being, resulting in anxiety, fatigue, burnout, and reduced motivation.

The Transactional Model of Stress and Coping proposed by Richard Lazarus and Susan Folkman ^[13] explains stress as an interaction between individuals and their environment. According to this model, stress is determined not only by external challenges but also by how individuals perceive those challenges and the coping resources available to them. Coping strategies may include problem-focused approaches that address the source of stress, emotion-focused strategies aimed at managing emotional reactions, and avoidance-oriented behaviours. Therefore, understanding how doctoral scholars experience stress and manage it is essential for strengthening institutional support systems and promoting

healthier academic environments.

Previous studies conducted across different academic disciplines have consistently reported higher stress levels among doctoral scholars compared to many other student groups. Misra and McKean (2000) ^[17] observed that academic workload, financial difficulties, role conflicts, and poor time management significantly contribute to stress among graduate students, thereby affecting both academic adjustment and psychological well-being. Similarly, Ross, Niebling, and Heckert (1999) ^[20] identified fear of failure, workload pressure, and academic expectations as major stressors influencing students' academic performance and concentration.

Research focusing specifically on doctoral scholars has reported even more serious concerns related to mental health. Evans *et al.* (2018) ^[7], in a large-scale study on graduate student mental health, observed that doctoral researchers are far more likely to experience anxiety and depression than the general population. Their study identified publication pressure, career uncertainty, financial insecurity, and supervisory relationships as important contributors to psychological distress. Levecque *et al.* (2017) ^[14] also reported high levels of emotional distress among Ph.D. scholars and emphasized the role of institutional climate, workload, and work-life imbalance in influencing mental health outcomes. Hyun *et al.* (2006) ^[9] similarly noted that graduate students frequently experience emotional exhaustion, loneliness, and academic burnout because of intense research demands and insufficient support systems.

Other researchers have highlighted the importance of mentorship and support networks in reducing stress among doctoral scholars. Barry *et al.*, (2018) ^[2] observed that emotional exhaustion among research scholars is often linked with publication pressure, deadlines, conference participation, and performance expectations. Their findings suggest that supportive supervision, peer interaction, and positive academic relationships can strengthen coping ability and improve psychological adjustment.

Coping behaviour has also received considerable attention in academic research. Lazarus and Folkman (1984) ^[13] explained that coping strategies differ depending on how individuals evaluate stressful situations and the resources available to manage them. Expanding on this work, Carver, Scheier, and Weintraub (1989) ^[4] developed the COPE framework, which describes a range of behavioural and emotional coping responses adopted under stressful conditions.

In the Indian context, several researchers have identified academic, financial and institutional challenges as major factors contributing to student stress. Kumar and Deo (2011) ^[12] opined that workload, examination pressure, family expectations, and employment uncertainty contribute strongly to academic stress among higher education students. Sharma and Kaur (2011) ^[21] also reported that research scholars experience pressure arising from academic competition and concerns about future career stability. Studies focusing on Indian research scholars have also highlighted issues such as delayed fellowships, inadequate infrastructure, administrative difficulties, and weak supervisor interaction as important contributors to stress (Sinha, 2016) ^[23]. Bhat and Khan (2019) ^[3] observed that

emotional fatigue and psychological exhaustion tend to increase when institutional support systems are inadequate. Climatic variability, uncertainty in experimental outcomes, and dependence on fellowships may further increase stress levels among scholars. Although several studies have examined academic stress and coping among university students and research scholars, comparatively little empirical attention has been given to Ph.D. scholars within agricultural institutions, particularly in India. Existing literature indicates that stress among doctoral scholars is shaped by a combination of academic, emotional, institutional, financial and career related factors. However, studies pertaining to stress and coping mechanisms among agricultural doctoral scholars are still scarce. Considering this research gap in view, the present study focuses on assessing perceived stress and mechanisms among Ph.D. scholars.

Objectives of the Study

1. To identify major sources of perceived academic stress among doctoral scholars.
2. To assess coping strategies adopted by Ph.D. scholars.
3. To examine the relationship between perceived academic stress and coping mechanisms.
4. To suggest institutional interventions for improving scholars' well-being.

Hypothesis of the study

H₀: There is no significant relationship between perceived academic stress and coping mechanisms among Ph.D. agricultural research scholars.

H₁: There exists a significant relationship between perceived academic stress and coping mechanisms among Ph.D. agricultural research scholars.

Research methodology

Conceptual Framework

The conceptual framework of the study focused on the relationship between academic stress, cognitive appraisal, coping behaviour, and stress outcomes. The framework explains that research scholars first evaluate academic situations during the stage of primary appraisal, where they judge whether a situation is stressful or challenging. This is followed by secondary appraisal, in which they assess their ability, resources, and support systems to deal with those demands. Based on this appraisal process, scholars adopt different coping responses. These coping mechanisms may include problem-focused strategies aimed at managing the source of stress, emotion-focused strategies intended to regulate emotional reactions, or avoidance-based responses. The framework assumes that effective coping strategies may help reduce stress and improve adjustment, whereas ineffective coping may increase emotional exhaustion and psychological strain.

Research Design

The study followed a descriptive as well as correlational research design. The descriptive component was used to understand and document the nature of stress experiences, coping strategies, and behavioural responses among doctoral scholars. The correlational design was applied to examine the relationship between perceived academic stress and

coping mechanisms among the respondents.

Locale and Sampling Procedure

The study was conducted at Govind Ballabh Pant University of Agriculture and Technology (GBPUAT), Pantnagar, and ICAR–Indian Agricultural Research Institute (IARI), New Delhi. These institutions were selected purposively because they are among the leading agricultural universities and research institutions functioning under the National Agricultural Research System (NARS), GBPUAT being the oldest most agricultural university and IARI being the highest rank holder in the NIRF ranking also both institutions have a large population of doctoral scholars from diverse agricultural disciplines.

The population for the study included registered Ph.D. scholars enrolled in different agricultural departments and disciplines. Respondents belonged to areas such as Agricultural Extension, Agronomy, Genetics and Plant Breeding, Plant Pathology, Horticulture, Soil Science, Agricultural Economics, Environmental Science. The study initially targeted 200 Ph.D. scholars selected through random sampling from the total doctoral scholar population of the selected universities. Out of these, 166 scholars participated in the study, resulting in a non-response rate of 17 per cent. Respondents were selected through Simple Random Sampling, ensuring equal opportunity for participation among eligible scholars.

Data Collection and Research Instruments

Out of the total respondents, 166 scholars participated in the study, resulting in a non-response rate of 17 per cent. Respondents were selected through Simple Random Sampling to ensure equal opportunity for participation among eligible scholars. Primary data were collected through a structured online questionnaire prepared in line with the objectives of the study, the theoretical framework, and previous literature on academic stress and coping behaviour among research scholars.

Perceived stress among doctoral scholars was measured using a modified version of the Perceived Stress Scale (Ponnamperuma *et al.*, 2023) ^[19]. The scale was adapted to suit the academic and research conditions of agricultural doctoral scholars by including items related to publication pressure, research workload, uncertainty in experiments, delays in fellowship disbursement, supervisor expectations, institutional procedures, and career-related concerns. Responses were recorded on a five-point Likert scale.

Coping behaviour was assessed using a modified Brief COPE Scale (Carver *et al.*, 1989) ^[4] adapted to measure coping strategies specifically associated with academic and research-related stress among doctoral scholars. Respondents indicated the extent to which they used different coping strategies using a four-point response scale.

Data analysis

Descriptive statistical tools such as frequency, percentage, mean, standard deviation, and ranking were used to analyse the profile of respondents, levels of perceived stress, coping mechanisms, and stress outcomes among doctoral scholars. Pearson's correlation analysis was used to examine the relationship between perceived stress and coping mechanisms.

Results

Profile of Respondents

The respondents belonged to different agricultural disciplines such as Agricultural Extension, Agronomy, Plant Pathology, Genetics and Plant Breeding, Horticulture, Environmental Science, and related areas. Most of the respondents were in the age group of 24–30 years, indicating that a large proportion of doctoral scholars were at an early stage of their academic and professional careers. Both male (39.6%) and female (60.4%) scholars participated in the study, reflecting gender representation within agricultural higher education institutions. A large number of respondents (68%) were receiving institutional fellowships. However, delays in fellowship disbursement were reported by many scholars and emerged as an important source of financial and emotional stress during the doctoral programme.

Perceived Academic Stress Among Doctoral Scholars

The distribution of respondents represented in Table 1.1 according to their level of stress revealed that the majority of the respondents (66.87%) belonged to the medium stress category, with scores ranging from 61–89. Further, 18.67 per cent of the respondents were found in the high stress category (above 89), while only 14.46 per cent of the respondents fell under the low stress category (below 61). The findings indicate that most of the respondents experienced a moderate level of stress, suggesting that academic, research, and personal demands may be contributing to stress among the respondents. The comparatively smaller proportion of respondents in the low stress category shows that only a limited number of respondents were able to maintain lower stress levels.

The findings presented in Table 1.2 indicate that concern regarding future career opportunities emerged as the most prominent source of stress among the respondents. The statement related to uncertainty about career prospects after completion of the Ph.D. recorded the highest mean score (4.20). This suggests that worries related to employment and professional stability strongly affect doctoral scholars.

Stress associated with inability to complete research work within stipulated timelines and pressure to publish research papers also recorded high mean scores (3.93 each), indicating that publication expectations and academic productivity contribute substantially to stress. Respondents further reported that inadequate guidance, lack of research resources, fellowship delays, and difficulties in balancing research responsibilities added to their stress levels. The findings further indicated that institutional procedures, inadequate laboratory facilities, financial difficulties, and balancing personal life with research responsibilities contributed moderately to stress among respondents.

Table 1.1: Perceived Academic Stress Among Research Scholars

S. No.	Category	Range	Frequency	Percentage
1	Low	Below 61	24	14.58
2	Medium	61-89	111	66.67
3	High	Above 89	31	18.75
Total			166	100

Table 1.2: Perceived Academic Stress Among Research Scholars

Sl. No.	Academic Stress Statements	Mean	SD	Rank
1	I am concerned about my future career prospects after completing my Ph.D.	4.20	1.16	I
2	I experience pressure to publish research papers.	3.93	0.99	II
3	I experience stress when I am unable to complete research tasks within the stipulated time.	3.93	0.96	II
4	Lack of adequate guidance or mentorship contributes to my stress.	3.82	1.11	III
5	Limited availability of research resources contributes to my stress.	3.73	1.25	IV
6	I experience stress due to uncertainty in experimental results or field trials.	3.71	1.07	V
7	Managing research work, coursework, and thesis writing simultaneously is stressful for me.	3.69	1.10	VI
8	Delays in receiving the fellowship contribute to my stress.	3.67	1.42	VII
9	I experience stress when research experiments fail or need to be repeated.	3.64	1.15	VIII
10	High expectations from my research supervisor contribute to my stress.	3.62	1.15	IX
11	Academic competition among research scholars contributes to my stress.	3.60	1.08	X
12	I experience pressure to complete my Ph.D. within the prescribed time frame.	3.58	1.17	XI
13	Fieldwork requirements and seasonal research demands increase my stress level.	3.56	1.22	XII
14	Balancing personal life and research responsibilities is challenging for me.	3.51	1.14	XIII
15	Financial constraints during my doctoral programme contribute to my stress.	3.49	1.32	XIV
16	Institutional processes and formalities contribute to my stress.	3.47	1.14	XV
17	Administrative procedures within the institution contribute to my stress.	3.42	1.17	XVI
18	Inadequate laboratory facilities contribute to my stress.	3.40	1.28	XVII
19	Critical feedback from my research supervisor contributes to my stress.	3.38	1.16	XVIII
20	Academic and family expectations are sometimes overwhelming for me.	3.33	1.24	XIX

Cognitive Appraisal of Academic Stress

The analysis related to primary appraisal, presented in Table 2, showed that a majority of respondents perceived their academic responsibilities and research workload as stressful and demanding. More than three-fourths of the scholars considered research deadlines overwhelming, while many respondents felt that academic demands exceeded their coping capacity. 84.4 percent of the respondents perceived their academic workload as stressful, while 15.6 percent did not. A majority of the respondents 77.8% considered

research deadlines overwhelming, whereas 22.2 percent did not share the same view. Further, 91.1 percent of the respondents perceived their research tasks as challenging, while only 8.9 percent did not. In addition, 68.9 percent of the respondents felt that academic demands exceeded their capacity, whereas 31.1 percent did not perceive academic demands beyond their capacity. These findings indicate that doctoral scholars frequently experience psychological pressure while managing research-related responsibilities.

Table 2: Primary Appraisal Analysis

Statement	Yes (Freq.)	Yes (%)	No (Freq.)	No (%)
I perceive my academic workload as stressful.	140	84.4	26	15.6
I consider research deadlines as overwhelming.	129	77.8	37	22.2
I perceive my research tasks as challenging.	151	91.1	15	8.9
I feel that academic demands exceed my capacity.	114	68.9	52	31.1

During the stage of secondary appraisal (Table 3), the findings showed that 66.7 percent of the respondents felt confident in managing their academic responsibilities, while 33.3 percent did not. Regarding availability of resources to manage research challenges, 42.2 percent of the respondents reported having adequate resources, whereas 57.8 percent reported inadequacy of resources. More than half of the

respondents (55.6%) stated that they received sufficient support from their supervisors, while 44.4 percent reported inadequate supervisory support. Further, 62.2 percent of the respondents considered themselves capable of dealing with academic stress effectively, whereas 37.8 percent did not feel capable of managing stress effectively.

Table 3: Secondary Appraisal Analysis

Statement	Yes (Freq.)	Yes (%)	No (Freq.)	No (%)
I feel confident in managing my academic responsibilities.	111	66.7	55	33.3
I have adequate resources to handle research challenges.	70	42.2	96	57.8
I receive sufficient support from my supervisor.	92	55.6	74	44.4
I am capable of dealing with academic stress effectively.	103	62.2	63	37.8

Coping Mechanisms Adopted by Scholars

The data presented in Table 4.1 revealed that a large majority of the respondents (71.08%) were grouped in the medium category of coping mechanisms, with scores ranging from 32-41. In comparison, 18.68 per cent of the respondents belonged to the high category, while only 10.24

per cent were in the low category. This indicates that most respondents adopted coping strategies at a moderate level to manage stress and related challenges. The lower percentage in the low category suggests that only a few respondents had inadequate coping abilities.

Table 4.2 further showed that engaging in relaxation

activities was the most commonly used coping strategy, recording the highest mean score (3.42). This was followed by trying to remain positive during stressful situations (Mean = 3.38), indicating that respondents attempted to maintain a positive outlook during stress. Seeking guidance from supervisors or experts ranked third with a mean score of 3.36, while accepting situations that could not be changed ranked fourth (Mean = 3.31). Seeking emotional support from friends or family members ranked fifth with a mean score of 3.24, followed by planning work to manage academic responsibilities and taking practical steps to solve research related problems. Actively trying to overcome research challenges secured the eighth rank.

Overall, the findings indicate that respondents mainly relied on adaptive coping strategies, particularly those related to emotional regulation and problem-solving. Strategies such as relaxation, positive thinking, planning, and seeking guidance suggest that most doctoral scholars attempted to

manage stress effectively. The presence of avoidance-oriented responses such as delaying work and distracting oneself from stress also indicates that some scholars experienced difficulty handling prolonged academic pressure. The relatively lower preference for ignoring academic problems suggests that respondents generally remained engaged with their research responsibilities despite experiencing stress. The findings therefore indicate that prolonged exposure to academic stress may gradually increase the tendency toward maladaptive coping behaviours among some scholars.

Table 4.1: Coping Mechanisms Adopted by Research Scholars

S. No.	Category	Range	Frequency	Percentage
1	Low	Below 32	17	10.42
2	Medium	32-41	118	70.83
3	High	Above 41	31	18.75
Total			166	100

Table 4.2: Coping Mechanisms Adopted by Research Scholars

Sl. No.	Coping Mechanism Statements	Mean	SD	Rank
1	I engage in activities that help me relax.	3.42	0.78	I
2	I try to stay positive during stressful situations.	3.38	0.78	II
3	I seek guidance from my supervisor or experts.	3.36	0.83	III
4	I accept situations that cannot be changed.	3.31	0.73	IV
5	I seek emotional support from friends or family.	3.24	0.93	V
6	I plan my work to manage academic responsibilities.	3.20	0.84	VI
7	I take practical steps to solve research-related problems.	3.18	0.75	VII
8	I actively try to overcome research challenges.	3.16	0.74	VIII
9	I delay my work when I feel stressed.	3.04	0.95	IX
10	I distract myself from research-related stress.	2.80	0.92	X
11	I try to ignore academic problems.	2.44	0.94	XI
12	I withdraw from academic tasks when overwhelmed.	2.38	1.11	XII

Level and Outcomes of Perceived Stress

The analysis of perceived stress levels presented in Table 5 showed that the majority of respondents experienced stress “often,” (44.4%) suggesting that academic stress is a regular feature of doctoral research life. Further analysis in Table 6 indicated that most scholars experienced moderate (57.8%) to high levels (31.1%), reflecting the significant emotional and psychological burden associated with doctoral research.

Table 5: Frequency of Stress Experienced by Respondents

Stress Frequency	Frequency	Percentage (%)
Rarely	11	6.7
Sometimes	59	35.6
Often	74	44.4
Very Often	22	13.3
Total	166	100

Table 6: Intensity of Stress

Stress Intensity	Frequency	Percentage (%)
Low	18	11.1
Medium	96	57.8
High	52	31.1
Total	166	100

The stress outcome analysis shown in Table 7 revealed that stress affected both emotional well-being and research productivity among respondents. The statement, “My stress affects my research productivity,” recorded the highest

mean score (3.71), indicating that stress had a significant effect on the research performance of doctoral scholars. Emotional exhaustion due to academic work also showed a high mean score (3.64), suggesting that many respondents experienced mental and emotional fatigue during their doctoral programme. Respondents reported a moderate level of motivation towards their research work, with a mean score of 3.42. Similarly, the statement, “I am able to manage stress effectively”, recorded a mean score of 3.24, indicating a moderate ability to cope with stress. Among all the statements, satisfaction with research progress recorded the lowest mean score (3.13), reflecting comparatively lower satisfaction with academic progress. The findings revealed that prolonged academic pressure may negatively affect both research productivity and emotional well-being among doctoral scholars.

Table 7: Outcomes of Stress

Statements	Mean	SD
My stress affects my research productivity.	3.71	0.93
I am satisfied with my research progress.	3.13	0.88
I feel emotionally exhausted due to academic work.	3.64	0.97
I am able to manage stress effectively.	3.24	0.82
I feel motivated towards my research work.	3.42	0.86

Information Needs of Research Scholars

Most of the respondents expressed the need for mentoring support during their doctoral programme, with 91.1 percent

indicating that guidance and mentorship were important for them. Only a small proportion (8.9%) reported that they did not require such support. Career guidance was also identified as a major need by 88.9 percent of the respondents, while 11.1 percent did not feel the need for it. Huge number of scholars (82.2%) reported that stress management training would help deal with academic pressure, whereas 17.8 percent did not express this requirement. Similarly, 75.6 percent of the respondents stated that they needed information related to financial support, while 24.4 percent did not report such a need. In total findings directs towards the importance of stronger support systems for doctoral scholars, particularly in areas related to mentoring, career planning, stress management, and financial guidance.

Table 9: Informational and Institutional Support Needs

Support Needs	Yes (Freq.)	Yes (%)	No (Freq.)	No (%)
Need for stress management training	136	82.2	30	17.8
Need for career guidance	148	88.9	18	11.1
Need for mentoring support	151	91.1	15	8.9
Need for financial support information	126	75.6	40	24.4

Relationship Between Academic Stress and Coping Mechanisms

Pearson correlation analysis was conducted to examine the relationship between perceived academic stress and coping mechanisms among Ph.D. agricultural research scholars. The correlation coefficient ($r = 0.26$) reflected a low positive relationship between stress and coping behaviour. Suggesting that scholars who experience higher levels of stress tend to adopt coping mechanisms more frequently. However, the obtained p-value (0.07) was greater than the significance level of 0.05, which indicates that the relationship was statistically non-significant.

Discussion

The findings indicate that doctoral scholars experience different forms of stress during their research programme, including academic pressure, institutional challenges, emotional strain, and uncertainty regarding future careers. In agricultural research, these pressures are often more intense because scholars must manage coursework, field experiments, laboratory work, publication requirements, fellowship-related issues, and institutional responsibilities simultaneously. Future career prospects emerged as the highest-ranked stressor among respondents. The result reflects growing uncertainty related to academic employment, post-doctoral opportunities, contractual research positions, and competition within the higher education sector. Similar observations were reported by Levecque *et al.* (2017) ^[14], who identified career insecurity as a major source of anxiety and emotional exhaustion among doctoral scholars. The study also showed that publication pressure and inability to complete research work within the stipulated time significantly contributed to stress. This reflects the increasing “publish or perish” culture within academic institutions, where publication output and research visibility strongly influence academic progression. In agricultural sciences, these pressures become more challenging because research outcomes often depend on

climatic conditions, field trials, laboratory access, and seasonal variability. Delays in experiments or crop failures may directly affect publication timelines and increase stress among scholars. Barry *et al.* (2018) ^[2] similarly reported that publication expectations and continuous academic evaluation contribute substantially to emotional strain among research scholars. The findings suggested that institutional and supervisory support play an important role in managing stress. Cureton *et al.* (2011) ^[5] observed that effective mentoring helps reduce work-related stress and improves coping among scholars in higher education, while Mavrogalou-Foti *et al.*, (2024) ^[18] linked positive supervisor relationships with better mental health outcomes among doctoral students. Respondents also reported that limited research facilities and delays in fellowship disbursement contributed considerably to their stress. Inadequate guidance and delayed financial support often created uncertainty and emotional pressure, particularly among scholars dependent on institutional funding.

The cognitive appraisal analysis showed that most respondents perceived academic workload, research deadlines, and research responsibilities as stressful and difficult to manage. These findings support the Transactional Theory of Stress and Coping proposed by Lazarus and Folkman ^[13], which explains that stress develops when individuals perceive demands as exceeding their coping capacity. Similar findings were reported by Simões *et al.* (2024) ^[22], who observed that cognitive appraisal plays an important role in shaping burnout and emotional exhaustion among university students, especially when academic demands are perceived as overwhelming. Kristensen *et al.* (2023) ^[10] also reported that academic stress is closely linked with psychological distress when students feel unable to cope effectively with academic challenges.

The findings further showed that doctoral scholars used a mix of emotional, problem-focused, and avoidance-oriented coping strategies to manage academic stress. Relaxation activities emerged as the most common coping response, while many respondents also relied on positive thinking, seeking guidance from supervisors, and emotional support from friends and family members. Similar observations were made by Folkman and Moskowitz (2004) ^[8], while Eisenberg *et al.* (2012) ^[6] reported that active coping and social support contribute to better emotional adjustment and lower psychological distress. At the same time, avoidance-oriented behaviours such as delaying work, distraction, and ignoring academic problems were also reported. Although these strategies may provide temporary relief, prolonged reliance on avoidance coping may negatively affect emotional well-being, motivation, academic engagement, and research productivity. Levecque *et al.* (2017) ^[14] similarly reported that workload pressure, publication demands, and institutional expectations contribute substantially to emotional exhaustion among Ph.D. scholars, while Kusurkar *et al.* (2021) ^[11] found that prolonged academic stress and burnout reduce research productivity and academic engagement. The informational needs analysis further showed that most respondents required stronger mentoring support, stress management programmes, career guidance, and psychological support services. It suggests that institutions should move beyond traditional academic

supervision and develop more comprehensive support systems for doctoral scholars.

The present finding of a non-significant relationship between perceived stress and coping mechanisms among Ph.D. agricultural research scholars is supported by several earlier studies. Mercer and Thomas (2024)^[16] reported that although doctoral researchers use different coping strategies, their effectiveness depends on the context and nature of the stress experienced. Vilser *et al.* (2022)^[26] also observed weak associations between stress and coping among Ph.D. scholars, while Yang and Bai (2020)^[27] highlighted the influence of cultural and contextual factors on coping effectiveness. Vacchi *et al.* (2024)^[24] further noted that differences in stress and coping measurements often make direct relationships difficult to establish. Psychosocial factors may also influence this relationship. Agarwal *et al.* (2024)^[1] found that family support helped reduce stress, while Liu *et al.* (2024)^[15] emphasized the role of self-efficacy and psychological resilience in stress management. Varo *et al.* (2023)^[25] additionally reported that personality traits influence both the choice and effectiveness of coping strategies. The findings are also consistent with the Transactional Model of Stress and Coping, suggesting that coping strategies are effective only when they appropriately match the stress experienced by an individual. Overall, the study indicates that stress among Ph.D. agricultural research scholars is multidimensional and influenced by academic workload, career uncertainty, institutional environment, financial conditions, resilience, and social support systems, highlighting the need for stronger institutional support through counselling, mentorship, stress management programmes, timely fellowship support, and career guidance.

Suggestions for Institutional Interventions for Improving Scholar Well-Being

The study highlights the need for stronger institutional support systems for doctoral scholars within agricultural universities and research institutions. Counselling services, mental health support, stress management programmes, and mentorship systems should be strengthened to help scholars manage academic and emotional pressure more effectively. Institutions should also focus on timely fellowship disbursement, improved research infrastructure, simplified administrative procedures, and better access to academic resources to reduce institutional stress among scholars. Career guidance, professional development programmes, and workshops on coping skills, time management, and research planning may further help scholars handle academic challenges more efficiently. In addition, promoting peer support, healthy supervisor–scholar relationships, collaborative academic environments, and work–life balance can contribute positively to scholars' psychological well-being and research productivity. Regular assessment of scholars' well-being and the development of supportive institutional policies may also help create a healthier and more inclusive research culture within higher education institutions.

Authors Contribution

Conceptualization: SS, PP; methodology: PP, SS, VK; formal analysis and investigation: PP, SS; writing-original

draft preparation: SS, PP; writing-review and editing: all authors; supervision: VK. All authors read and approved the final manuscript.

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