

Stress factor in Education: Impact on female Science and Mathematics distance learners in South-Western Nigeria

Comfort Olawumi Adeniyi¹, Esther Oluwasayo Oladele^{2*} & Abiola Yetunde Fashina³

Science Education Department, Distance Learning Institute, University of Lagos, Nigeria

*Corresponding author's email address: eoladele@unilag.edu.ng

Abstract

This study examined the effects of stress on female distance learners and their responses to stress at the Distance Learning Institute, South-West Nigeria. The population of the study encompassed all female Science and Mathematics Education Distance Learners in South-West, Nigeria. The study employed a survey research design involving three hundred and thirty-eight (338) learners, selected by purposive sampling techniques. A researcher-designed questionnaire with a reliability coefficient of 0.79 was used. The data were analyzed using frequency counts, mean, correlation, and regression. The study revealed that most learners were exposed to financial, psychological, academic, and family stress. However, the use of different emerging technologies to facilitate learning has been very helpful. It was found that married female distance learners were more stress-influenced than unmarried female distance learners. The study recommended, among others, that female distance learners should be given more support by the institutions' counsellors, family, and friends to boost their interest in learning.

Keywords: Female learners, science and mathematics, distance education, Nigeria stress

Background to the study

Stress is a factor that affects everyone, no matter the age or background. Psychologists say that stress is a difficult and unhealthy state that puts pressure on a person, affecting their physical, mental,

emotional, and thinking abilities. This can happen because of different activities, events, or life situations. Garret (2001) explains that stress is the body's general response to any demand placed on it. In simple terms, when challenges arise, the body attempts to adapt or adjust to restore things to normal. There is a range of psychological responses that occur in response to the demands of the environment or any noxious stimulus (Owen-Yeates, 2005).

Some of the familiar responses to the body's demands include increased heart rate, respiratory rate, blood pressure, and blood sugar levels. Stress leads people to a lot of frustration, affects mental health, and can determine academic success. Garret (2001) argued that stress has been a part of humans' lives from childhood. Stress can come from an external or internal environment. External environment-related stresses include a difficult task, academic pressure, and inability to have access to life essentials such as food, shelter, and clothing. Internal stresses, on the other hand, include illness, hormonal changes that occur during adolescence or menopause, or even some normal physical changes lead to conflict (Anniko, Boersma, Tillfors, 2019). Stress can be categorised as either positive or negative, depending on each individual's unique ways of perceiving the tension between the two forces (Garret, 2001; Bolam & Dodgson, 2013).

On the basis of the above, stressful experiences and emotional difficulties are capable of impairing various school-related skills, including motivation to learn and to participate in learning, goal orientation, school performance, and academic achievement (Bolam & Dodgson, 2013). In Nigerian universities, the main task facing students is intellectual, but student achievement is influenced and impacted by several stressors, which can reduce the ability to cope with academic rigor. Stress is necessary at times for motivation. However, if the level of stress is on the high side, it can result, depression and some illnesses such as headache, sleeplessness, high blood pressure, and so on. Also, if stress is not well managed, it can affect one's social life, it can lead to drug addiction, alcoholism, and suicide attempt (Amiri,2024; Singh, 2015; Muhammad & Saghir, 2019)

The nature of Distance Learning Education exposes the learners to diverse challenges, which may lead to stress. The commonly identified stress factors faced by distance learners, according to Greenberg (2015), include marital stress such as divorce, separation,

death of a spouse, and payment of children's school fees. Other stress types include job stress, academic stress, and financial stress, among several others. Distance learners' focus on academic work has been influenced by marital or family-related problems (Greenberg, 2015). Most learners, especially females, when confronted with too much stress, lose the motivation to study can affect their grades in some or even across all their courses. Stress is capable of destabilising Students' academic life, emotions, study habits, and social life (Garret, 2001)

Research on gender and stress is not yet conclusive, as researchers hold different views on the subject. According to Tuncay and Singh (2015), stressful emotions such as depression, anxiety, and fear are common in women. These researchers found that female students experienced stress-related financial problems, exam pressure, failing a test, being rejected by those they love, relationship breakups, and depression, among other emotional stressors. In contrast, Anene (2017) conducted a study on both sexes and found a range of stressors common to all students, such as external factors from one's surroundings that affect mental and physical well-being, career progression, examination, professional advancement, and insecurity

The resultant effect of these stress-related experiences includes changes in eating and sleeping habits, new responsibilities, and heavier workloads in family and academics. A study by Uzunboyly (2010) found no difference in the effect of stress between teenage girls and boys. Also, Lin et al. (2020) revealed that academic stress has a negative influence on their academic performance. Stress can be categorised as either positive or negative stress, depending on each individual's unique ways of responding to it (Garret, 2001; Bolam & Dodgson, 2013).

Statement of the Problem

With increasing enrollment of females in distance education, it is reasonable to expect that managing stress can also become more challenging for female distance learners, especially in science and mathematics, two subjects that are often perceived as difficult for a large proportion of students. Stress has been one of the major factors inhibiting the academic success of women who participate in distance learning in Nigeria. Stress is an emotional or physical discomfort that occurs as a consequence of the failure of a human body to cope appropriately with situations posing threats, whether actual or

imagined. It is practically impossible for a human to live without stress in a situation where an individual needs to face a series of challenges both within and outside her environment. However, the level of stress response differs from person to person. It is on this premise that the researcher is motivated to examine the influence of stress on the academic achievement of female Science and Mathematics Distance Learners in South-Western, Nigeria

Theoretical Framework

This study was guided by the stress response theory roposed by Selye (1976a). This theory was adopted because it emphasizes human reaction to stress. He proposed a triadic model as the basis for the stress-response pattern. He saw stress being the common trigger of adaptive reactions within humans and revealed that death sets humans free from stress (Selye, 1974). He has found in his earlier publications that stress is the general response of the human body to any request.

He proposed that such changes in human body due to stress happen at the local and system level. Such that the stress process at system level deals with stress and how an individual respond to it. This Selye, referred to as the general adaptation syndrome (GAS). As seen in Figure 1, GAS is believed to be the main cause of stress, being the origin of most health-related problems.

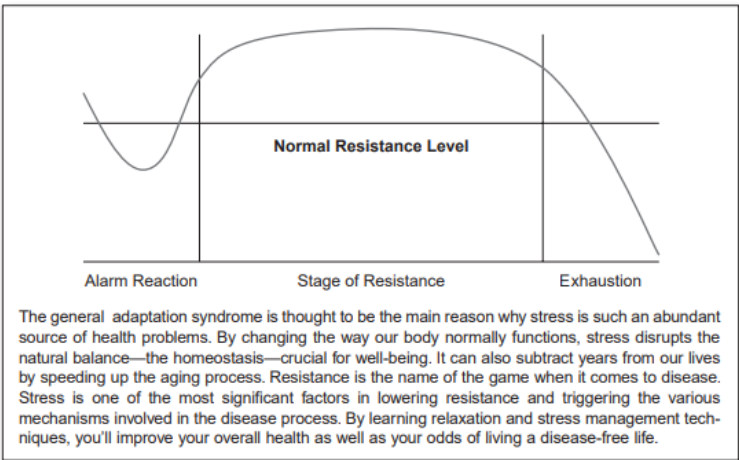


Figure 1: Diagram of the General Adaptation Syndrome (GAS) Model

Purpose of the study

The study therefore aimed to examine the effects of stress and subsequent response of female Distance Learners in the Distance Learning Institute, South-western Nigeria. Specifically, the study is to:

1. Determine the relationship between job, marital, academic, and financial stress, and academic achievement among Science and Mathematics distance learners in South-western Nigeria.
2. Ascertain the relative contribution of academic, job, marital, and financial stress to the academic achievement of female distance learners in South-western Nigeria.
3. Determine the stress factors affecting Female Distance learners in South-western Nigeria.

Research Questions

This study will therefore provide answers to the following research questions:

1. Is there any significant relationship between academic, job, marital, and financial stress and academic achievement among Female Science and Mathematics Distance learners in South-Western Nigeria?
2. How do marital, academic, job, and financial stress each contribute to the academic achievement of female Science and Mathematics Distance learners in South-Western Nigeria?
3. What are the stress factors affecting female Distance learners in South-Western Nigeria?

Research Methodology

A descriptive survey research design was employed in this study. The population of the study comprised the entire female Mathematics and Science Distance Learners in South West Nigeria. Four hundred and fifty (University of Lagos, Nigeria, University of Ibadan, and Lagos State University) female Mathematics and Science Distance Learners purposively selected from years 3 and 4 from the three sampled institutions were involved in this study, but only 338 instruments duly filled and returned were used as data collected for the study. The purposive sampling method was employed. This is to ensure that only third- and fourth-year female learners studying mathematics and science were involved in the study. The motivation for using these categories of learners was because they have spent some years on the

programmes and have experienced how to combine education with work and or family.

The instruments for data collection were a researcher-designed questionnaire together with a semi-structured interview guide. The questionnaire was formulated on a 4-point Likert scale of strongly agree, agree, disagree, and strongly disagree. A pilot study was conducted on 40 female science and mathematics distance learners from the Distance Learning Institute, University of Lagos, and a reliability coefficient of 0.77 was found using Cronbach's alpha technique. 40 respondents were sampled for the pilot study because 10% of the study sample, according to Johanson & Brooks (2010), is appropriate for a pilot study to determine the reliability value of the research instrument. In addition to the questionnaire, a total of 15 learners who completed the questionnaire in the three selected ODL institutions were conveniently sampled and interviewed. The interview questions were adapted from the items of the questionnaire. The purpose of the interview was to obtain additional information on stress factors affecting female distance learners and suggestions for stress reduction. The data collected were analysed using descriptive and inferential statistics such as: Mean, Standard Deviation, Pearson Product Moment Correlation (PPMC) test and Regression Analysis were employed in this study

Results

Research Question 1: Is there any significant relationship between marital, academic, job, and financial stress and academic achievement among Female Science and Mathematics Distance learners in South West Nigeria?

Table 1: Mean, Standard Deviation, and Correlation among the Variables

SN	Variables	Mean	SD	1	2	3
1.	Academic Achievement	3.619	.52467	1		
2.	Financial Stress	3.7278	.39725	.134	1	
3.	family Stress	3.2110	.67807	.073	.272	1
4.	Academic Stress	3.351	.47645	.001	.020	.108
	Emotional Stress	2.870	.4357	.002	.134	.147
5.	Job Stress.	3.741	.77645	1.000	.418	.184
				.000	.011	.012

Table 1 shows the mean, standard deviation, and correlations among the variables. It can be observed that the independent variables correlated with Female Distance Learners academic achievement: Job Stress ($r = .184, p = .012 < .05$), family Stress ($r = .272, p = .000 < .05$), Academic Stress ($r = .108, p = .000 < .05$), Emotional Stress ($r = .147, p = .011 < .05$) and Financial Stress ($r = .134, p = .001 < .05$). Therefore, there is a significant relationship among the independent variables and the dependent variable among Distance Learners in South West Nigeria

Research Question 2

What is the relative contribution of marital, academic, job and financial stress to the academic achievement of Female Science and Mathematics Distance learners in South West Nigeria?

Table 2: Relative Contribution of the Independent Variables (Job, Marital, Academic, and Financial Stress) to the Production of the Dependent Variables (Academic Achievement) among Female Distance Learners.

Model	B	Std. error	Beta	T	Sig.	P
Academic Achievement	0.09	0.01	0.02	4.93	.000	< .05
Job Stress	0.66	0.00	0.27	3.18	.006	< .05
Family Stress	0.51	0.01	0.67	0.25	.007	< .05
Academic Stress	0.31	0.97	0.31	1.46	.008	< .05
Psychological/ Emotional Stress	0.24	0. 04	0.26	1.32	.026	< .05
Financial Stress	0.54	.056	0.64	3.01	.004	< .05

Table 2 revealed the relative contribution of the Independent Variables (Job, Marital, Academic, and Financial Stress) to the Production of the Dependent Variables (Academic Achievement) among Female Distance Learners. It can be observed from the table above that the t-statistics and p-values of the individual independent variables contributed significantly to distance learners' academic achievement. Job Stress ($\beta=0.09$, $t=3.18$, $p=.006<.05$), Family Stress ($\beta=0.51$, $t=0.25$, $p=.007<.05$), Academic Stress ($\beta=0.31$, $t=1.46$, $p=.008<.05$), Emotional Stress ($\beta=0.24$, $t=1.32$, $p=0.026<.05$) and Financial Stress ($\beta=0.54$, $t=3.01$, $p=.004<.05$). Hence, The individual independent variables tested in this study relatively contributed significantly to the production of the dependent variables (Academic Achievement) among Distance learners in South West Nigeria.

Research Question 3: What are the stress factors affecting Female Distance learners in South West Nigeria?

Qualitative Data

Some of the participants were interviewed to collect qualitative data for the study. The purpose was to allow the participants to elaborate on their experience with academics, work demands, and/family challenges. A sample of the students out of those who completed the questionnaire from the three selected institutions was interviewed.

The quantitative analysis results in figures 1 and 2 describe the general picture of the students' views on the stress factors affecting Distance learners and the coping strategies

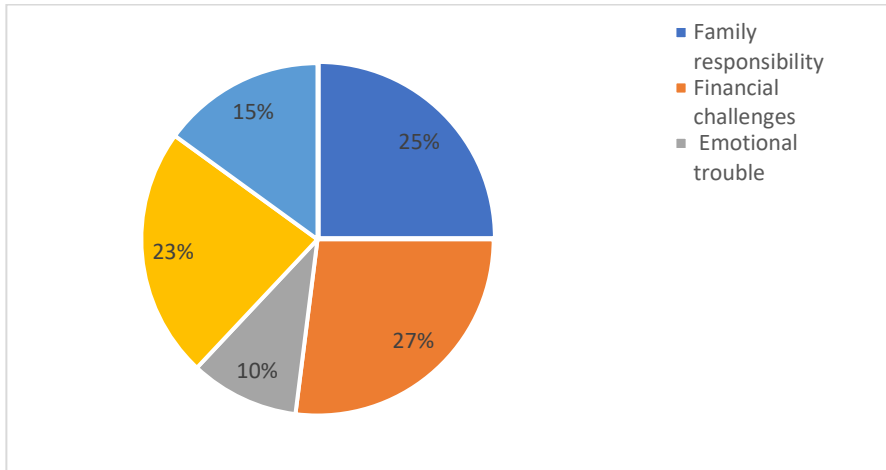
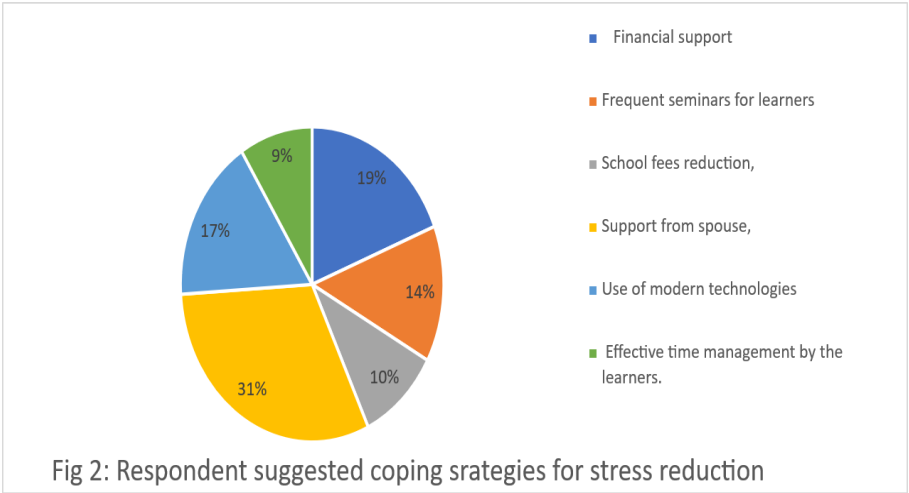


Fig 1: Stress factors affecting females Distance Learners



From the result obtained from the structured interview, 25% of the respondents indicated that family responsibilities/challenges are the principal stress factors militating against the female distance learners in the south-western Nigeria. In addition, 27% of the respondents identify financial challenges and inabilities to meet various financial responsibilities as the major stressor. Workload and responsibilities from the workplace were identified by 23% of the respondents, emotional trouble was identified by 10% of the respondents, and academic stress was identified by 15% of the respondents as the stressors affecting female Distance Learners ‘academic achievement in South West Nigeria.

Stress coping strategies identified by the respondents include: financial support, organizing counselling/seminars for learners frequently, school fees reduction, support from spouse, use of modern technologies to enhance e-learning, and effective time management by the learners. However, among these strategies identified, the majority of the respondents opined that the use of modern technologies and support from a spouse will assist greatly in stress reduction among female distance Learners.

Discussion of Findings

The findings of the study revealed that the independent variables correlated with the dependent variable (learners’ academic achievement). Hence, there is a significant relationship between the level of stress and academic achievement among Female Distance

learners in the South-Western, Nigeria. This finding is in line with the work of Adu Henaku *et al.* (2025), who reported that Stress was widespread among the female married distance education students, and many of them expressed intentions to withdraw from their programmes. The major sources of stress included personal factors, such as work and family responsibilities, as well as institutional factors like excessive academic workload, unresolved grievances, and the high financial costs associated with the programme. Also, the studies of Beldarrain (2006), Kosheleva, Amarnor, and Chernobilsky (2015) showed a significant correlation between financial, family (marital), and job stressors on distance learners' academic commitment.

Additionally, the study revealed that the individual independent variables observed, Job, Marital, Emotional, Academic, and Financial Stress relatively contributed significantly to learners' academic achievement. This agrees with the work of Messarra (2005), who showed that job, marital, academic, and financial issues are among the stress factors among university distance learners.

The study also revealed that workload/workplace responsibilities, family responsibilities, finance, emotional, and academic stress correlate with learners' academic achievement. This supports the findings of Erikito, Otumala, and Oluwasola (2025) who reported that financial constraints, household responsibilities, workplace stress, and psychological challenges significantly influenced academic performance. Also, this corroborates the findings of Beldarrain (2006); Kosheleva, Amarnor, & Chernobilsky (2015); Lin *et al.*, (2020), which showed a significant correlation between financial, family, and job stressors and distance learners' academic commitment.

Conclusion

Stress has been seen as a common factor in the life of the respondents, regardless of age or cultural background and there is a range of psychological responses that occur in response to the demands of the environment. There is a significant relationship among the independent variables and the dependent variable among Female Distance Learners. Job, Marital, Academic, Emotional, and Financial Stress relatively contributed significantly to learners' academic achievement. Different emerging technologies to facilitate learning at the different institutes have been very helpful in coping with the identified stress factors. Also, the

majority of the learners indicated that married female distance learners have been influenced more than unmarried female distance learners

Recommendations

Based on the findings of the study, it is recommended that the university/Government should organize soft loans for indigent students to reduce learners' financial burdens. Also, Institutions should provide accessible counselling services, mentorship programmes, and stress management workshops to help learners develop coping strategies for emotional and academic stress. Educational administrators should ensure prompt resolution of students' complaints and institutional challenges to minimize frustration and psychological stress among learners.

Universities and study centres should encourage the formation of peer-learning groups and women's support circles where learners can share experiences, receive encouragement, and collaborate on academic tasks. In addition, awareness campaigns should be conducted to sensitize families, employers, and communities about the unique challenges faced by female distance learners. Support from spouses and family members can significantly reduce stress and enhance academic performance.

References

- Adu Henaku, E., Sambah, F., Quansah, F., Kwesi Agomedah, E., Srem-Sai, M., Hagan, E. Ankomah-Sey, V.R., & Schack, T. (2024). Stress-related experiences and intentions to quit studies among female married postgraduate distance education students in Ghana. *BMC psychology*, 12(1), 348. <https://doi.org/10.1186/s40359-024-01839-x>
- Amiri, M. (2024). Strategies for effective occupational stress management in the workplace. *International Journal of Advanced Research in Humanities and Law*, 1(4), 85–95. <https://doi.org/10.63053/ijrel.34>
- Anene, E. M. (2017). *Occupational Stress: Counseling the Workers for Survival*. Onitsha: Academic Publishers.
- Anniko, M. K., Boersma, K., & Tillfors, M. (2019). Sources of stress and worry in the development of stress-related mental health

- problems: A longitudinal investigation from early to mid-adolescence. *Anxiety, Stress, & Coping*, 32(2), 155–166.
- Asuni, T., Schoenberg, F., & Swift, C. (1994). *Mental disease in Africa*. Ibadan, Nigeria: Spectrum Books Ltd.
- Beldarrain, Y. (2006). Distance education trends: Integrating new technologies to foster student interaction and collaboration. *Distance Education*, 27(2), 139–153.
- Bolam, H., & Dodgson, R. (2013). Retaining and supporting mature students in higher education. *Journal of Adult and Continuing Education*, 8(2), 179–194.
- Erikitola, Otumala, & Oluwasola (2025); Psycho-socio and Economic Factors as Determinants of Women's Academic Performance in Distance Education in South Western Nigeria. *Journal of Education and Practice* (9),4, 49 – 63,
- Fischer, G. (2011). *Improving throughput in the engineering bachelor's degree: Report to the Engineering Council of South Africa*. Glen Fisher Consulting.
- Garret, M. F. (2001). Psychological dimensions of stress: Likely effects and management strategies. *Journal of Educational Studies*, 7(3), 22–31.
- Greenberg, F. H. (2015). Academic-related stress among private secondary school students in India. *Asian Education and Development Studies*, 3(2), 118–134.
<https://doi.org/10.1108/AEDS-02-2013-0007>
- Habibah, E., Ping, W. S., & Chong, M. A. (2011). Stress and academic achievement among 453 undergraduate students in University Putra Malaysia. *Procedia – Social and Behavioral Sciences*, 29, 646–655.
<https://doi.org/10.1016/j.sbspro.2011.11.288>
- Johanson, G. A., & Brooks, G. P. (2010). Initial scale development: Sample size for pilot studies. *Educational and Psychological Measurement*, 70(3), 394–400.

- Kosheleva, E. Y., Amarnor, A. J., & Chernobilsky, E. (2015). Stress factors among international and domestic students in Russia. *Procedia – Social and Behavioral Sciences*, 200, 460–466. <https://doi.org/10.1016/j.sbspro.2015.08.096>
- Lin, X. J., Zhang, C. Y., Yang, S., Hsu, M. L., Cheng, H., Chen, J., & Yu, H. (2020). Stress and its association with academic performance among dental undergraduate students in Fujian, China: A cross-sectional online questionnaire survey. *BMC Medical Education*, 20(1), 19. <https://doi.org/10.1186/s12909-020-02095-4>
- Messarra, L. C. (2005). *Sources of stress for first year students and their perception of the university employed support services* [PDF]. Retrieved from <http://core.ac.uk/download/pdf/42016276.pdf>
- Muhammad, & Saghir. (2019). Exploration of anxiety factors among students of distance learning: A case study of Allama Iqbal Open University. *Journal of Distance Education*, 41(2), 67–78.
- Owen-Yeates, A. (2005). Stress in Year 11 students. *Pastoral Care in Education*, 23(4), 42–51.
- Selye, H. (1974). *Stress without distress*. Philadelphia, PA: J. B. Lippincott.
- Selye, H. (1976). Forty years of stress research: Principal remaining problems and misconceptions. *Canadian Medical Association Journal*, 115, 53–56.
- Tuncay, N., & Singh, K. (2015). Anxiety, stress, depression, and psychosocial functioning of Indian adolescents. *Indian Journal of Psychiatry*, 57(4), 367–374.
- Tuncay, N., & Uzunboylu, H. (2010). Anxiety and resistance in distance learning. *Cypriot Journal of Educational Sciences*, 5(2), 142–150.