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Assessment of Stressors among Academic Staff of University of Ibadan, South-Western Nigeria using Taguchi Approach

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ABSTRACT

Employees in almost every occupation deal with stress, an almost inevitable aspect of life, which oftentimes lead to anxiety and eventually, chronic health issues, aside having negative impact on performance. This research was focused on academic members at University of Ibadan, by assessing the impact of stressors on the academic members. Questionnaires were distributed across 13 faculties, with 110 subjects selected through random sampling. While stressors were identified with the aid of the transactional model, Taguchi's Design of Experiment (DOE) aided in identifying the most influential stress factor affecting the academic staff. Thereafter, SPSS and Excel, were used in the identification of primary stressors across different ranks, alongside the major individual coping mechanism. The signal-to-noise ratio response table, through the delta value, revealed that academic workload (0.45) was the most significant factor that affects all academic staff members either at the minimal or maximal level. This was followed by administrative-related issues (0.41), research and career development (0.27), remuneration (0.21), student-related issues (0.18), and interpersonal relationships (0.16). Through the comparative study of the stressors, results revealed that normal lecturers (L2/L1) primarily identified administrative issues (39.47%) as their primary stressor. Senior lecturers perceived concerns about research and career development (31.84%), associate professors faced significant stress related to academic workload (11.70%), and professors emphasised remuneration (22.54%) as their primary stressor. No staff members highlighted student-related issues and interpersonal relationships as primary stressor. The signal-to-noise ratio result was verified using SPSS, confirming Taguchi's DOE findings. Lack of formal stress management initiatives and dissatisfaction with existing programs highlight the reliance on individual coping mechanisms among academic staff. Despite these varied stressors, the most reported individual coping mechanism across all ranks was sleep (3.43), followed by exercise (3.26), chatting (3.15), entertainment (3.06), eating (2.79), and medication (2.40).

Keywords: Academic members, Coping mechanisms, Occupation, Stressors, Stress management

INTRODUCTION

Employees in virtually all occupations deal with stress. As a result, stress might be considered a universal element (Ekienabor, 2016). While stress has been described as an imbalance between an individual's capacity to manage demands and their actual capacity (Hawkins, 1987), stressors are stress-causing agents (Mohajan, 2012). Stress was once seen as one of the normal attributes of job demand, but has now been recognised as a serious problem that affects workers' well-being and efficiency (Sohail *et al.*, 2015). Findings of Bernadino Ramazinni in the 17th century emphasized the importance of designing a work environment which considers human capabilities and limitations (Mohd-Makhbul *et al.*, 2013). Although the effectiveness of ergonomically built workstations in lowering stress was

highlighted by Tarcan *et al.* (2004), it was not until recently that ergonomics received considerable attention for its roles in stress reduction.

In today's modern workplace, employees are increasingly expected to put in longer hours, as well as shoulder high levels of responsibility demand to work, to fulfill the ever-increasing standards for job performance (Haworth and Lewis, 2005). Therefore, it is necessary to critically examine several stress factors that contribute to the level of stress among employees and its impact on employees' well-being, job satisfaction, and productivity (Hoboubi *et al.*, 2017). Empirical studies also showed that organisations and employees worldwide are increasingly concerned about work-related stress (Gyllensten and Palmer, 2005). Organisations must supply services with the highest possible quality; otherwise, they will experience losses (Bolarinwa and Ofiebor, 2023). In the rapidly evolving landscape of higher education, particularly in Nigerian tertiary institutions, academic staff members are facing diverse challenges that go beyond their core responsibilities (Jacob *et al.*, 2022). This complex environment, coupled with external factors such as societal expectations and economic pressures, contributes to an intricate web of stressors that can affect the well-being and productivity of academic staff (Kamran, 2018).

In addition, the phenomenon concerning work-related stress has become more visible in the last three decades by occupational health scholars (Erasmus *et al.*, 2014). Employees and organisations worry about it when they realise that they have little control over it (Ekienabor, 2016). According to the American Academy of Family Physicians (AAFP), symptoms related to stress account for around 65% of family doctor visits (Ongori and Agolla, 2008). The American Psychological Association (APA) states that heart disease, cancer, lung disorders, accidents, cirrhosis of the liver, and suicide are the six main causes of death that are linked to chronic stress (Salleh, 2008). With this prognosis, stress ranks among the biggest dangers to performance and health in the twenty-first century (Asamoah, 2017). Therefore, it is necessary to regularly assess stress in various occupational settings.

Although individuals may experience varying degrees of stress almost on daily basis, it on the long run leads to anxiety, and may eventually create chronic health issues, or much more (Kennedy and Date, 2022), in addition to reduced productivity. In recent times, mortality rate at unripe age has been increasing among academic staff of the University of Ibadan. However, information on stressors responsible for these deaths remains sparse. This could potentially have long term repercussion on the University's reputation. Hence, this research was aimed at evaluating the stressors that affect academic staff within University of Ibadan, South-Western part of Nigeria. Therefore, the objectives include: (1) Identifying the common stressors affecting most academic staff members. (2) Applying Taguchi's Design of Experiment (DOE) to identify the most significant stress factor that affects the academic staff members. (3) Analysing the distinct primary stressor across different academic ranks and individual coping mechanisms among academic staff. The justification for this research was based on comprehensively addressing the pervasive challenges faced by academic staff of University of Ibadan regarding occupational stress. Failure to undertake this investigation could have negative consequences, including diminished productivity of workers and the institution, as well as compromised employee well-being. Akinmayowa and Kadiri (2018) identified different stressors among academic staff in a Nigerian university. The stressors include academic workload, student-related issues, research and career development, interpersonal relationships, and administrative-related issues.

The most often-used stress model is the Transactional Model of stress and coping, derived by Lazarus and Folkman (Obbarius *et al.*, 2021). According to this model, interactions that take place between an individual and the environment are what ultimately determine an individual's ability to manage stress and respond to obstacles (Margaret *et al.*, 2018). Stress, subjective in nature, is not an inherent quality of an external situation, but rather, a product of

the individual's perception and evaluation of it (Berjot and Gillet, 2011). Taguchi devised a technique for designing experiments to assess the impact of various parameters on a process performance measure, which ultimately assesses the effectiveness of the process (Hamzaçebi, 2020).

Taguchi's experimental design utilises orthogonal arrays to structure the parameters impacting a process and the corresponding levels of variation. This approach efficiently gathers essential data to identify the most influential stress factor on product quality, minimising the need for extensive experimentation and conserving time and resources (Pardo, 2016). It is a common practice to consider only the transactional model of stress, while assessing the impact of stressors among the academic staff, without validating the identified most influential stressors affecting the academic staff members. In this research, the use of Taguchi's Design of Experiment (DOE), alongside the transactional model of stress was employed in identifying the most influential stressor among the identified stressors. The research was also extended towards assessing the often-used individual coping mechanism by the staff members.

RESEARCH METHODS

Sampling Procedure

Academic staff members with current position at University of Ibadan, across 13 faculties within the system were considered as the study population. A simple random sampling technique was used for selecting subjects in the study. By ensuring that each academic staff member had an equal chance of being chosen, this technique strengthened the sample's representativeness (Noor *et al.*, 2022).

Data Collection

Questionnaires were distributed to each of the randomly selected academic members across thirteen (13) faculties for data collection. As indicated by Bolarinwa and Kumapayi (2023), questionnaire, when properly structured and appraised, can be a major useful tool for identifying questionable areas in work environments and other systems. The questionnaire was developed to account for both open and close-ended questions based on previous literature, and tailored to the context of the study, using structured sections to accomplish the objectives of the study.

Data Analyses

Data collected on stressors were first analysed using Minitab software to investigate the major stressor affecting the academic staff members and further analysed using SPSS and Excel software packages.

Data Analysis Using Taguchi Technique

The identified stressors affecting the performance of academic staff (academic workload, administrative-related issues, research and career development remuneration, student-related issues, and interpersonal relationships) as identified in the questionnaires were evaluated using Taguchi DOE on Minitab software to determine the most significant factor that affects the performance and productivity of academic staff. Each factor was assigned three levels (low, medium, and high), and by varying these levels against each other, the interactions and effects on the system were observed and recorded. Steps include:

Step 1: Opening of the Minitab software.

Step 2: In generating a Taguchi design (orthogonal array), **stat > DOE > Taguchi > Create Taguchi Design** was chosen. Each column in the orthogonal array corresponds to a

specific factor with three levels. Each row represented a unique experimental run, and the cell values indicated the settings of the factors for that run.

The L27 orthogonal array was done on Minitab software by varying the factors across the three levels (Low, Medium, and High). The L27 array helped in examining the interactions between multiple variables.

Step 3: **Stat > DOE > Taguchi > Analyse Taguchi Design** was thereafter chosen to analyse the experimental data.

Signal–to–noise ratio

The quality feature, "Large-is-better" was used for the analysis. This implies that the stressor with the highest delta will be considered to have the highest impact on the academic staff members well-being.

$$\text{"Large is better"}\frac{\text{s}}{\text{n}} = -\log\frac{1}{n}\left(\sum\frac{1}{y^2}\right) \quad (3.1)$$

Where:
n= number of responses in factor level combination
y= responses for the given factor level combination

Figure 1 shows how the Taguchi's Design of Experiment (DOE) was utilised in the analysis of stressors, using a flow diagram. Step 1 involved problem formulation, which entails establishing a goal, as well as identifying the relevant factors and their corresponding levels. Step 2 involved executing experiments. The number of factors and their levels influenced the choice of orthogonal arrays. In instances like the current study, which involved 6 factors each with 3 levels, an L27 array with 27 rows was suitable. Step 3 focuses on analysing the results, specifically examining the signal-to-noise ratio (SNR).

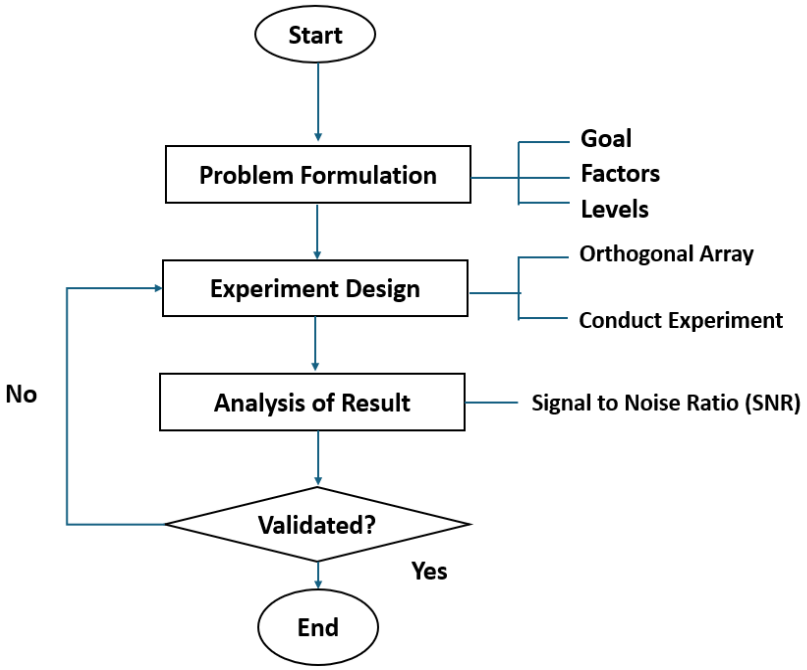

Figure 1: Flow Diagram for Identifying the Most Influential Stressor Using Taguchi Technique

Analysis of the Data Using SPSS and Excel

The impact of the stressors on the academic staff was further analysed to identify the major stressors experienced by each academic position, using SPSS and Excel. The often-used

individual coping mechanism by the academic staff members was also identified. Figure 2 represents the flow chart of the steps involved in using SPSS and Excel.

Figure 2: Flowchart for Steps Involved in Analysis of Data Using SPSS and Excel

RESULTS AND DISCUSSION

Sampling Procedure

Following the sampling procedures described under research methods above, the thirteen faculties studied include: Agriculture and Forestry, Arts, College of Medicine, Economics and Management Science, Education, Environmental Design and Management Science, Law, Pharmacy, Renewable Natural Resources, Science, Social Science, Technology and Veterinary Medicine.

Data Collection

The questionnaire was structured into three sections:

1) Demographic information: Information relating to the interviewed subjects (academic staff), including Gender, age, marital status, educational qualification, position/rank, department, employment status and work experience.
2) Stress and work-related stressors (factors)
3) Stress management: This covered strategies (coping mechanisms) commonly by the academic members in combating stress. These include: Eating, sleep, entertainment, medications, chatting with friends and exercise.

Altogether, while seventy-six male subjects responded to the questionnaires, thirty-four female subjects also responded, totaling to one hundred and ten (110) subjects.

Data Analyses

Demographic characteristics

The demographic profiles of participants are as shown in Figures 3 to 7. Figure 3 revealed that 69.1% of the sample consisted of males, while the remaining 30.9% were females. The marital status of academic staff members (Figure 4) revealed that sizable portions were married (88%), while a lesser percentage were widowed (1%) with singles being (11%). Ordinary lecturers made up the largest group (40.0%) in terms of position/rank within the institution (Figure 5), followed by senior lecturers (29.1%), associate professors (10.9%), and professors (20.0%). In addition, age distribution highlighted a diverse range of ages among the academic staff (Figure 6); 4% of the subjects fell below 30 years, 22% fell below 31 to 40, 38% of the subjects fell within ages 41 to 50, and 36% of the subjects above 51. Educationally, 80% hold doctoral degrees, 18% have master's degrees, and 2% possess bachelor's degrees (Figure 7).

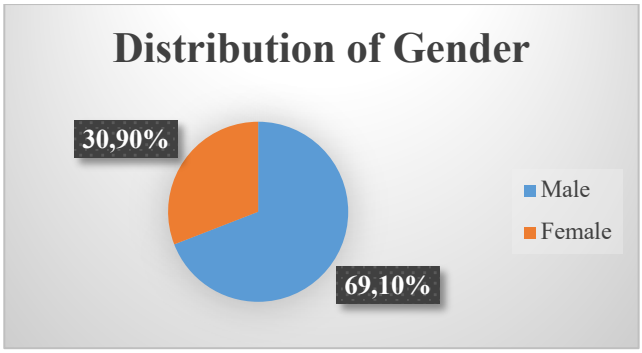

Figure 3: Distribution of Academic Staff Gender

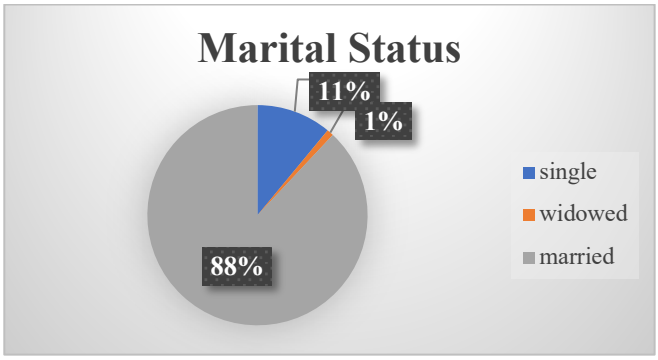

Figure 4: Distribution of Academic Staff Based on Marital Status

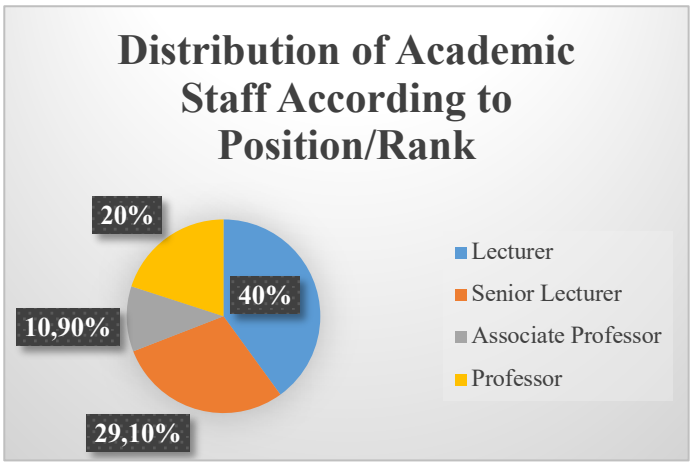

Figure 5: Distribution of Academic Staff Based on Position/Rank

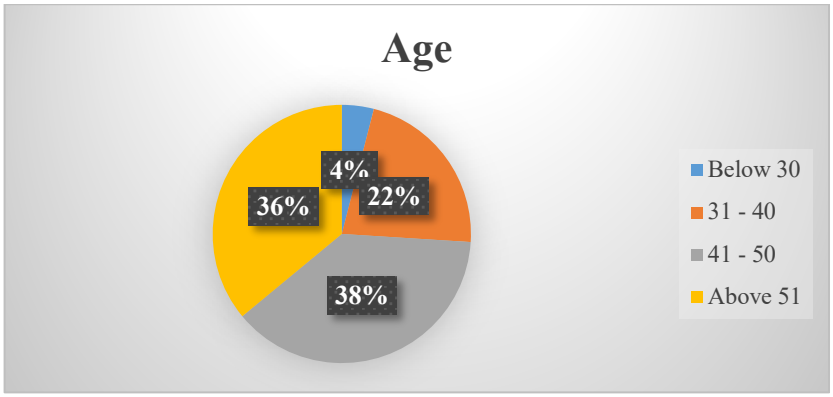

Figure 6: Distribution of Academic Staff based on Age

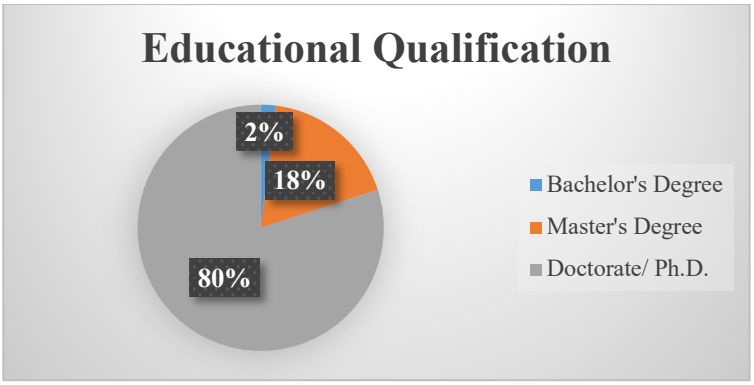

Figure 7: Distribution of Academic Staff Based on Educational Qualification

Experience of Stress at Work

Figure 8 represents a descriptive analysis of "Do you experience stress at work?" The result showed that (9.1%) of respondents claimed they do not experience stress, while many respondents (90.9%), claimed they experience stress at work.

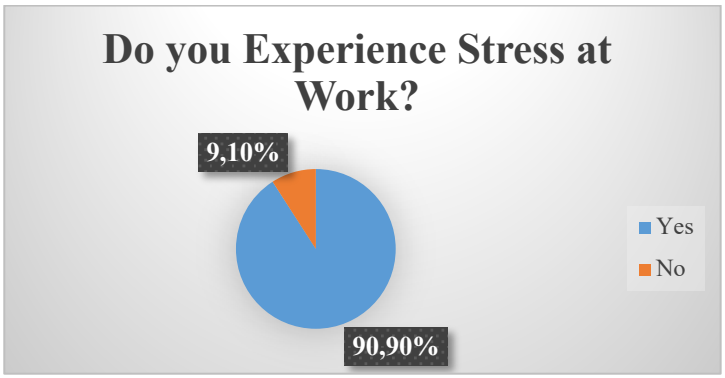

Figure 8: Percentage of Respondents who Experience Stress at Work

Furthermore, distribution of responses based on academic ranks is as shown in Table 1. The distribution of academic staff who reported to experiencing stress ("Yes") is as follows: Ordinary Lecturer (34.5%), Senior Lecturer (25.5%), Associate Professor (10.9%), and Professor (20.0%). Conversely, a lower percentage of participants (9.1%) reported ("No") to the question, 'experience stress in professional capacities?' This distribution of responses showed that while no Professor or Associate Professor indicated that they do not experience stress, a percentage of other cadres; Ordinary Lecturers (5.5%) and Senior Lecturers (3.6%) indicated that they do not.

Table 1. Stress Distribution among Academic Staff of University of Ibadan, Nigeria

			Rank				Total
			Lecturer	Senior Lecturer	Associate Professor	Professor	
Do you experience stress at work?	No	Count	6	4	0	0	10
		% of Total	5.5%	3.6%	0.0%	0.0%	9.1%
	Yes	Count	38	28	12	22	100
		% of Total	34.5%	25.5%	10.9%	20.0%	90.9%
Total		Count	44	32	12	22	110
		% of Total	40.0%	29.1%	10.9%	20.0%	100.0%

The high frequency of stress indicated there are underlying challenges in the workplace affecting the academic members' well-being, and which may eventually affect their performance.

Stressors on Academic Staff

Analysis of stressors among academic staff using orthogonal array L27

Having confirmed that majority of (90.9%) academic staff members experience stress daily, as generated below (Table 2) is the L27 orthogonal array when the 6 stress factors were run against 3 levels (low, medium, and high). While each column in the orthogonal array corresponds to a specific stress factor with three levels, each row represents a unique experimental run, and the cell values indicate the settings of the factors for that run.

Table 2. Stressors Affecting Academic Staff Members in Orthogonal Array L27

Student Related Issues	Academic workload	Research and Career Development	Remuneration	Administrative Related Issues	Interpersonal Relationship	Rank
67	33	57	63	12	64	40
67	33	57	63	45	16	40
67	33	57	63	43	14	40
67	50	36	37	12	64	45
67	50	36	37	45	16	45
67	50	36	37	43	14	40
67	19	11	6	12	64	43
67	19	11	6	45	16	40
67	19	11	6	43	14	44
30	33	36	6	12	16	45
30	33	36	6	45	14	41
30	33	36	6	43	64	43
30	50	11	63	12	16	45
30	50	11	63	45	14	46
30	50	11	63	43	64	40
30	19	57	37	12	16	45
30	19	57	37	45	14	40
30	19	57	37	43	64	40
9	33	11	37	12	14	40
9	33	11	37	45	64	40
9	33	11	37	43	16	41
9	50	57	6	12	14	42
9	50	57	6	45	64	45
9	50	57	6	43	16	42
9	19	36	63	12	14	43
9	19	36	63	45	64	44
9	19	36	63	43	16	40

Analysis of stressors using Taguchi's Design of Experiment (DOE)

Further analysis of the L27 orthogonal array result was used to generate the signal-to-noise ratio (SNR), as shown in Table 3. The signal-to-noise ratio from the Taguchi design of experiment revealed that the major factor (stressor) affecting the academic staff members of University of Ibadan is academic workload, with delta value of 0.45. This is followed by administrative-related issues (0.41), then, research and career development (0.27),

remuneration (0.21), student-related issues (0.18), and lastly, interpersonal relationship with colleagues (0.16), observed to be the least stressor being perceived by the academic members.

Table 3. Response Table for Signal to Noise Ratios

Level	Student Related Issues	Academic Workload	Research and Career Development	Remuneration	Administrative Related Issues	Interpersonal Relationship
1	32.43	32.48	32.48	32.62	32.68	32.41
2	32.61	32.27	32.64	32.41	32.27	32.57
3	32.43	32.72	32.36	32.45	32.52	32.50
Delta	0.18	0.45	0.27	0.21	0.41	0.16
Rank	5	1	3	4	2	6

Analysis of stressors using SPSS and Excel

The factors affecting stress levels among academic staff were further analysed to explore how different academic rank perceives each stressor. Understanding these variables is essential in managing stress efficiently and advancing the overall well-being of academic staff members in academic settings.

Academic Workload: Table 4 findings revealed that 63.2% of academic staff were consistently stressed by their workload, with 28.3% rarely stressed and 8.5% never stressed. Among those always stressed, lecturers (22.6%) and senior lecturers (20.8%) had the highest percentages, while professors (10.4%) and associate professors (9.4%) followed. Lecturers (15.1%) predominantly fell into the rarely stressed category, while senior lecturers (5.7%) and professors (7.5%) also showed lower percentages. Associate professors did not report rare stress. Interestingly, 8.5% never felt stressed, with senior lecturers (3.8%) having the highest proportion, followed by professors (2.8%) and associate professors (1.9%).

Table 4. Descriptive Statistic Summary for Academic Workload

			Rank				Total
			Lecturer	Senior Lecturer	Associate Professor	Professor	
Fact_AcadWrk	Never	Count	0	4	2	3	9
		% of Total	0.0%	3.8%	1.9%	2.8%	8.5%
	Rarely	Count	16	6	0	8	30
		% of Total	15.1%	5.7%	0.0%	7.5%	28.3%
	Always	Count	24	22	10	11	67
		% of Total	22.6%	20.8%	9.4%	10.4%	63.2%
Total		Count	40	32	12	22	106
		% of Total	37.7%	30.2%	11.3%	20.8%	100.0%

This suggests that the stress level of academic staff is impacted by academic workload. High levels of stress brought on by the burden of academic workload can cause academic staff members' mental health to deteriorate, their job satisfaction to decline, and burnout to occur.

Student-Related Issues: An analysis of responses from Table 5 revealed varied experiences of academic staff regarding student-related issues. While 31.7% reported constant stress about such matters, 48.1% said they rarely felt stressed, and 18.3% never felt stressed. Among those always stressed, 31.7% cited student concerns, with lecturers and senior lecturers (11.5%) experiencing the highest frequency, followed by professors (4.8%) and associate professors (3.8%). Conversely, in the rarely stressed category, lecturers (21.2%) predominantly

comprised the largest proportion, followed by senior lecturers (11.5%), professors (11.5%), and associate professors (3.8%). Notably, 18.3% reported never being stressed about student issues, with lecturers (5.8%) forming the largest group, followed by professors (4.8%), associate professors (1.9%), and senior lecturers (5.8%). Additionally, 1.9% expressed uncertainty about student-related concerns.

Table 5. Descriptive Statistic Summary for Student-Related Issues

			Rank				Total
			Lecturer	Senior Lecturer	Associate Professor	Professor	
Fact_StdIssues	Do not know	Count	0	2	0	0	2
		% of Total	0.0%	1.9%	0.0%	0.0%	1.9%
	Never	Count	6	6	2	5	19
		% of Total	5.8%	5.8%	1.9%	4.8%	18.3%
	Rarely	Count	22	12	4	12	50
		% of Total	21.2%	11.5%	3.8%	11.5%	48.1%
	Always	Count	12	12	4	5	33
		% of Total	11.5%	11.5%	3.8%	4.8%	31.7%
Total		Count	40	32	10	22	104
		% of Total	38.5%	30.8%	9.6%	21.2%	100.0%

Research and Career Development: Academic staff members' experiences with stress related to research and career development (R&D) varied widely, as revealed in Table 6. Notably, 34.6% rarely felt stressed about R&D, while 10.6% never felt stressed. Conversely, 54.8% reported constant stress in this area. Among those always stressed, lecturers (21.2%) and senior lecturers (19.2%) formed the largest groups, followed by associate professors (5.8%) and professors (8.7%). In contrast, 34.6% rarely experienced stress about R&D, with lecturers (13.5%) being the largest group, followed by senior lecturers (9.6%), professors (9.6%), and associate professors (1.9%). Additionally, 10.6% never felt stress about R&D, with lecturers (3.8%), senior lecturers (1.9%), associate professors (1.9%), and professors (2.9%) comprising this group.

Table 6. Descriptive Statistic Summary for Research and Career Development

			Rank				Total
			Lecturer	Senior Lecturer	Associate Professor	Professor	
Fact_Rd	Never	Count	4	2	2	3	11
		% of Total	3.8%	1.9%	1.9%	2.9%	10.6%
	Rarely	Count	14	10	2	10	36
		% of Total	13.5%	9.6%	1.9%	9.6%	34.6%
	Always	Count	22	20	6	9	57
		% of Total	21.2%	19.2%	5.8%	8.7%	54.8%
Total		Count	40	32	10	22	104
		% of Total	38.5%	30.8%	9.6%	21.2%	100.0%

Administrative-Related Issues: Academic staff members' experiences of stress regarding administrative issues varied, as seen in Table 7. While 57% never felt stressed about administrative matters, 34.9% experienced rare stress. Conversely, the majority (59.4%) were constantly stressed about administration. Among those always stressed, lecturers (22.6%) and

senior lecturers (20.8%) had the highest percentages, followed by professors (10.4%) and associate professors (5.7%). Conversely, 34.9% rarely experienced administrative stress, with lecturers (15.1%) forming the largest group, followed by senior lecturers (7.5%), professors (8.5%), and associate professors (3.8%). Additionally, 5.7% never experienced administrative stress, with lecturers, senior lecturers, and professors each comprising 1.9%, while associate professors reported no instances of never experiencing such stress.

Table 7. Descriptive Statistic Summary for Administrative-Related Issues

			Rank				Total
			Lecturer	Senior Lecturer	Associate Professor	Professor	
Fact_AdmIssues	Never	Count	2	2	0	2	6
		% of Total	1.9%	1.9%	0.0%	1.9%	5.7%
	Rarely	Count	16	8	4	9	37
		% of Total	15.1%	7.5%	3.8%	8.5%	34.9%
	Always	Count	24	22	6	11	63
		% of Total	22.6%	20.8%	5.7%	10.4%	59.4%
Total		Count	42	32	10	22	106
		% of Total	39.6%	30.2%	9.4%	20.8%	100.0%

Interpersonal Relationships: The analysis of responses from Table 8 highlights the varied experiences of academic staff with stress related to interpersonal interactions. Notably, 43.3% rarely felt stressed about relationships, while 41.3% never felt bothered by them. Additionally, 11.5% always felt stressed about interpersonal issues, while 3.8% were unsure. Among those who never felt stressed, lecturers (13.5%) formed the largest group, followed by professors (12.5%), senior lecturers (11.5%), and associate professors (3.8%). Conversely, 43.3% occasionally experienced interpersonal stress, with lecturers (19.2%) being the largest group, followed by senior lecturers (11.5%), associate professors (5.8%), and professors (6.7%). Furthermore, 11.5% regularly encountered stress in relationships, with senior lecturers (5.8%) reporting the highest ongoing stress rate, followed by lecturers (3.8%) and professors (1.9%). Associate professors did not report ongoing stress in interpersonal connections.

Table 8. Descriptive Statistic Summary for Interpersonal Relationships

			Rank				Total
			Lecturer	Senior Lecturer	Associate Professor	Professor	
Fact_IntrpRel	Do not know	Count	2	2	0	0	4
		% of Total	1.9%	1.9%	0.0%	0.0%	3.8%
	Never	Count	14	12	4	13	43
		% of Total	13.5%	11.5%	3.8%	12.5%	41.3%
	Rarely	Count	20	12	6	7	45
		% of Total	19.2%	11.5%	5.8%	6.7%	43.3%
	Always	Count	4	6	0	2	12
		% of Total	3.8%	5.8%	0.0%	1.9%	11.5%
Total		Count	40	32	10	22	104
		% of Total	38.5%	30.8%	9.6%	21.2%	100.0%

Remuneration: The analysis from Table 9 highlighted the differing perceptions among academic staff regarding stress associated with remuneration. A significant portion (59.3%)

reported constantly feeling stressed about pay, while 14.8% experienced rare stress. Additionally, 13.0% expressed uncertainty, and 13.0% reported never feeling stressed about compensation. Among those always stressed, senior lecturers (20.4%) were most prominent, followed by lecturers (16.7%), professors (16.7%), and associate professors (5.6%). Conversely, 14.8% rarely experienced stress about pay, with lecturers (13.0%) forming the largest group, followed by senior lecturers (1.9%). Additionally, 13.0% were unsure about remuneration stress, with lecturers (5.6%) being the largest group.

Table 9. Descriptive Statistic Summary for Remuneration

			Rank				Total
			Lecturer	Senior Lecturer	Associate Professor	Professor	
Fact_Rum	Do not know	Count	6	4	2	2	14
		% of Total	5.6%	3.7%	1.9%	1.9%	13.0%
	Never	Count	4	4	4	2	14
		% of Total	3.7%	3.7%	3.7%	1.9%	13.0%
	Rarely	Count	14	2	0	0	16
		% of Total	13.0%	1.9%	0.0%	0.0%	14.8%
	Always	Count	18	22	6	18	64
		% of Total	16.7%	20.4%	5.6%	16.7%	59.3%
Total		Count	42	32	12	22	108
		% of Total	38.9%	29.6%	11.1%	20.4%	100.0%

Comparative assessment of stressors across academic staff rank

The distribution of reported stressors among academic staff members, categorised by their ranks within the institution, which helped in the identification of primary stressor across each rank is shown in Table 10.

1. **Ordinary Lecturers: Administrative Issues (39.47%)**

Implication: Lecturers perceived administrative issues as their primary stressor. This indicates that they may face challenges related to bureaucratic processes, paperwork, and administrative burdens. High levels of stress in this area could impede their ability to focus on teaching and research, leading to reduced job satisfaction and productivity. Implementing streamlined administrative procedures, providing administrative support staff, and offering training in administrative tasks could help alleviate stress and enhance the overall working environment for lecturers.

2. **Senior Lecturers: Research and Career Development (31.84%)**

Implication: Senior Lecturers perceived research and career development as their primary stressor. This indicates that they may face challenges related to maintaining research productivity, securing funding, and advancing their careers within the academic hierarchy. High levels of stress in this area could hinder their professional growth and lead to dissatisfaction with their career trajectory. Institutions should prioritise supporting senior lecturers in their research endeavours, providing resources for professional development, and creating opportunities for career advancement to alleviate stress and foster a supportive academic environment.

3. **Associate Professors: Academic Workload (11.70%)**

Implication: Associate Professors perceived academic workload as their most significant stressor. This suggests that they are likely grappling with the demands of teaching, research, and administrative responsibilities. The high perception of workload-related stress among Associate Professors could lead to burnout, reduced productivity, and overall

dissatisfaction with their roles. Addressing workload issues through effective time management strategies, workload distribution, and institutional support for task prioritization could improve their well-being and job satisfaction.

4. Professors: Remuneration (22.54%)

Implication: Professors identify remuneration as their most significant stressor. This suggests that despite their seniority and experience, concerns about compensation and financial security remain prominent. Stress related to remuneration could affect their morale, motivation, and job satisfaction. Institutions need to address this by ensuring fair and competitive compensation packages, recognising the contributions of professors, and providing avenues for professional growth and advancement.

Table 10. Analysis of stressors Across Academic Staff Ranks

Stressors	Associate professor	Lecturer	Professor	Senior Lecturer
Student Related Issues	9.94%	39.13%	20.50%	30.43%
Research and Career Development	9.50%	38.55%	20.11%	31.84%
Administrative Issues	9.60%	39.47%	20.00%	30.93%
Interpersonal Relationship	9.52%	38.83%	20.15%	31.50%
Remuneration	9.83%	36.99%	22.54%	30.64%
Academic Workload	11.70%	38.30%	19.68%	30.32%
Average	10.01%	38.54%	20.50%	30.94%

Validation of Taguchi's DOE with the Mean of Each Stressor

The signal-to-noise ratio from Taguchi, shown in Table 3 was further validated using SPSS and Excel as shown in Table 11 and Figure 9 to identify the mean of the stressors that significantly affect all academic staff members the most. The output matched with that obtained from the Taguchi DOE, as academic workload remains the most significant stressor that affects academic staff members mostly, while interpersonal relationships remain the lowest factor that impedes the productivity of academic staff daily.

Table 11. Mean of Stressors across all Ranks

	N	Mean
Fact_AcadWrk	106	3.55
Fact_AdmIssues	106	3.54
Fact_Rd	104	3.44
Fact_Rum	108	3.20
Fact_StdIssues	104	3.10
Fact_IntrpRel	104	2.62
Valid N (listwise)	102	

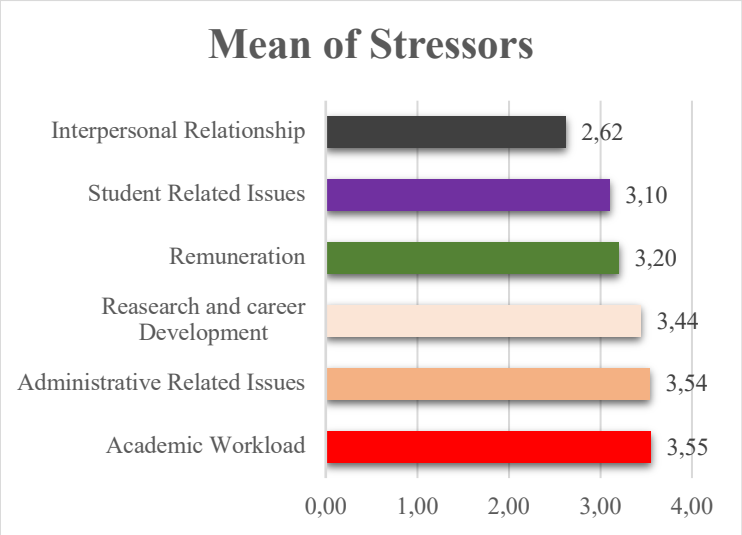

Figure 9: Mean of Stressors across all Ranks

Other Stressors among Academic Staff Members

The open-ended questions in the questionnaires revealed additional stressors experienced by academic staff. These include power and water shortages, internet connectivity issues, cramped workspaces, inadequate research facilities, family conflicts, multitasking pressures, and job security concerns. Recognizing these diverse stressors emphasises the need for comprehensive support systems tailored to the varied needs of staff members.

Analysis of Widely Used Coping Strategy

The most common coping strategies used by academic staff members are shown in Figure 10, which represents the mean values of stress management strategies, which range from 2.40 to 3.43. With a mean value of 3.43, sleeping was the most common approach among those listed. The importance of getting enough sleep and practising excellent sleep hygiene as essential elements of stress management at work is highlighted by this research. Notably, eating, interacting with friends, exercising, and entertainment also had relatively high mean values, demonstrating how frequently academic staff used these activities. However, medication scored lower in comparison, suggesting that it is not as commonly employed as other coping strategies. Therefore, organisations should consider offering a diverse range of coping mechanisms to accommodate the varied needs and preferences of their academic staff, ensuring a comprehensive approach to stress management in the university setting.

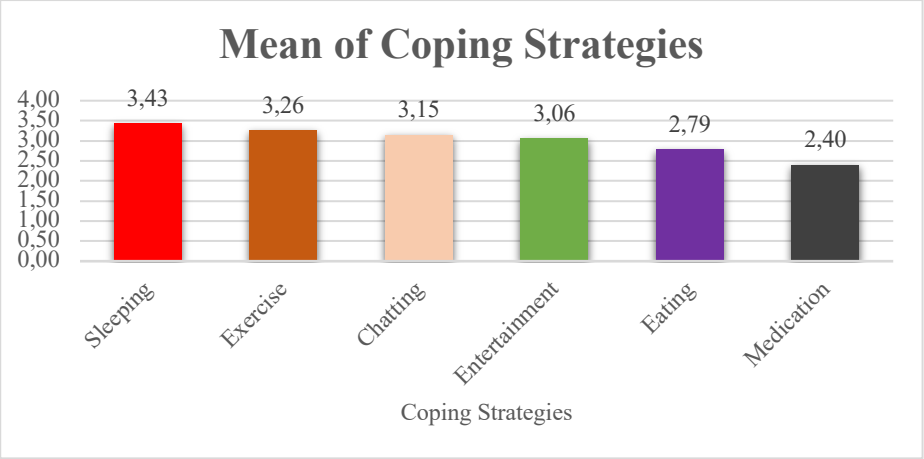

Figure 10: Mean of Coping Strategies Employed by Academic Staff

Other Coping Strategies

A few members of the academic staff also specified that they use other coping strategies such as taking breaks, resting, giving themselves holidays, going for retreats, praying, attending church programmes, meditation and listening to music to relieve themselves from perceived stress.

CONCLUSIONS

Common stressors influencing academic staff members in a Nigerian University have been assessed, and the following conclusions can be drawn:

1. Common stressors affecting academic staff members at the University of Ibadan are academic workload, research and career development, administrative-related issues, and remuneration.
2. The major stressor affecting all academic staff members in the University of Ibadan is the academic workload.
3. While academic workload is the most significant stressor across all ranks, the study also identified primary stressors peculiar to each rank. Ordinary lecturers (L2/L1) primarily identified administrative issues as their primary stressor, senior lecturers perceived concerns about research and career development, associate professors faced significant stress related to academic workload, and professors emphasised remuneration as their primary stressor. None of the academic staff members highlighted student-related issues and interpersonal relationships as a primary stressor. Of importance is it to point out that the most common individual coping mechanism used by the subjects is sleep, while the least employed is medications.
4. Promoting a healthy work environment requires addressing stressors and putting appropriate stress management techniques into practice.

RECOMMENDATIONS

Based on the findings of this study, several actionable recommendations are being proposed to support academic staff members at the University of Ibadan in managing stress and enhancing overall well-being:

1. **Implement Effective Stress Management Programs**: Develop and implement targeted stress management programs that address the primary stressors identified in this study. These programs should include workshops, reviews, and improved remuneration packages, counselling services, and resources aimed at building resilience and coping skills among academic staff.

2. **Streamlined Administrative Procedures**: This can involve simplifying bureaucratic processes by making the priorities of each rank clear, reducing the criteria for paperwork needed for promotions while maintaining academic integrity, setting realistic deadlines, minimising the rate at which the lower-rank lecturers attend meetings and committee matters while performing their basic roles.
3. **Research Support**: Providing adequate resources for research, such as access to funding opportunities and research facilities, can help maintain their research productivity. Additionally, creating pathways for career advancement, such as mentorship programs and leadership training, can offer senior lecturers opportunities for professional growth within the academic hierarchy.
4. **Workload Management Strategies**: Employment of more qualified academic staff members into the system and implementation of time management strategies tailored to their needs can help them balance their workload more efficiently. Distributing workload fairly and providing institutional support for task prioritisation can prevent burnout and enhance their overall well-being and job satisfaction.
5. **Competitive Compensation Packages**: This involves periodically reviewing salary structures to align with industry standards and acknowledging the contributions of professors through performance-based incentives.

Implementing these recommendations at the University of Ibadan will enhance academic staff well-being, job satisfaction, and productivity, fostering a positive work culture and supporting long-term success in fulfilling the university's mission.

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