

## EFFECT OF ARTIFICIAL INTELLIGENCE COUNSELLING TECHNIQUE ON STRESS MANAGEMENT AMONG COMPUTER STUDENTS WITH PHYSICAL DISABILITY IN TERTIARY INSTITUTIONS IN SOKOTO NIGERIA

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### Abstract

Computer studies can negatively impact the academic performance and mental health of those with physical disabilities. The impact of Artificial intelligence (AI) counselling technique on stress management of Computer students with physical disability was explored. There's a dearth of research relating to AI counselling technique and students with physical disabilities. The pretest posttest control group quasi-experimental research design was adopted. Six hypotheses guided the study. Participants were 98 physically challenged Computer students selected across ten institutions of higher learning in Nigeria. Experimental groups and the Control group were all pretested using self-designed Perceived Stress Level Scale (PSLS). The experimental group was treated with AI-enhanced counselling for 5 weeks while the control group was exposed to conventional counselling. Then subjected to PSLS. Percentage, mean, standard deviation and analysis of covariance (ANCOVA) were used. Findings were a significant main effect of AI counseling technique on stress management (F-ratio (1, 97) = 7.235), a significant main effect of level of study on stress management (F-ratio (2, 98) = 4.409). A significant interaction effect of level of student and AI counseling technique on the stress management (F-ratio (2, 96)=5.352) no significant interaction effect of gender, level of study and AI counseling technique was found (F-ratio (3, 95) =1.274). Incorporating AI counseling technique for managing stress was recommended.

Keywords: AI counseling, stress management, computer students, physical disability.

### Introduction

Computer students with physical disabilities often face compounded academic pressure, accessibility challenges, and social barriers that impact mental well-being. AI counselling techniques can bridge support gaps by offering tailored, accessible and stigma-free stress management interventions. In today's fast-paced world, stress is a pervasive issue affecting people from all walks of life. Srivastava et al, (2024) opined that young job seekers have a fair share of the stress syndrome as they often face considerable stress and insecurity in the course of their progression from training to employment. For students with physical disabilities, the stress may be higher and can negatively impact their academic performance, well-being, and mental health. Artificial intelligence (AI) has been beneficial for learning, gathering information, and research purposes (Dwivedi, et al, 2021). nonetheless, there is a knowledge gap on its impact regarding Counselling of computer students with physical disability. Despite the fact that counseling programme and service may possibly be obtainable for students in higher institution of learning, the provision may not meet the unique requirement of physically challenged students.

As a result, challenges related to adjustments and regulation, which affect their identity development force them to develop self-advocacy skills. AI counseling tools offer potential benefits, such as constant availability, accessibility, and anonymity, which could be on the whole valuable for students with disabilities. Therefore, this study aims to investigate the impact of an AI counseling technique on stress management among computer students with physical disabilities with gender and level of study

as moderating variables. Stress management technique is a set of strategies and programmes aimed to support individuals in handling stress by way of isolating stressors and decreasing their impact (Brown, 2021). It's a "wide-ranging range of procedures and psychotherapies concentrated at regulating stress, ordinarily to improve daily routine. (Odita, 2023). Stress management involves components/mechanisms that must be used appropriately to subsist excellently at school.

### **Artificial Intelligence**

Looking into the prospective advantages of AI-driven technology, it is an irrefutable fact that AI is being used far and wide in educational sector as well as organizations. Artificial Intelligence (AI) is a rapidly growing field that has been incorporated into various fields and activities (Dwived, et al., 2021). It executes multifaceted tasks demanding human-like intelligence, such as language processing, recognizing patterns, and making decisions.

AI counselling involves the use of ChatGPT to search for supports required for stress and anxiety. The GPT acronym is derived from ChatGPT language model called Generative Pre-Trained Transformer invented by Open AI. The AI can produce response text that is virtually indistinguishable from known human language (Frye, 2022). It is safe to describe ChatGPT as a highly developed Chabot that can handle a diversity of text-based demands, as well as simple question-answering and more difficult ones bordering on writing intricate piece and enabling people to maneuver tough situations (Liu, Zheng, Du, Ding, Qian, Yang & Tang, 2021).

### **Students with Disability in Higher Institutions**

Physical disabilities include any physical or medical condition that significantly impacts daily life. These include, but are not limited to, conditions such as visual or hearing impairments, mobility constraints, and seizure disorders (Tahir, et al, 2020). In this study, physical disabilities are defined as those that first and foremost primarily impact the body. People with physical disabilities face a variety of challenges and obstacles in performing everyday activities, isolation, independence, educational and career achievement (Aamlid & Brownfield, 2019; Gaskin, Imms, Dagley, Msall, & Reddihough, 2021; Kotera, Chircop, & Hutchinson, 2021; Salt & Jahoda, 2020). Nagar, Quirk, & Anderson (2023) explored the experiences college students using mental health applications undergo in order to advance self-care skills. Students of higher institutions of learning impacted by physical disability are limited in multiple ways

### **Stress**

Many students in the course of attending classes, doing assignments and making presentations experience one form of stress or the other. As a consequence, Obi (2020) & Khere et al. (2021). opines that stress is a wide-reaching involvement in the lives of a lot of persons. In the same vein, Odita (2023) theorized that stress is inescapable in school/employer environment, stress has become a familiar occurrence. Singh, et al (2021). Making an allowance for stress, allows for positive acceptance that leads to greater productivity and enhanced performance, while, deleterious stress leads to various complications. Agreeing with Gibbons (2021), school pressures and stress may impede academic performance nonetheless.

### **Statement of the Problem**

Computer studies are known for being challenging and demanding for all students. Computer students with physical disabilities experience high levels of stress. This is capable of creating negative impact on their academic achievement, performance, well-being, and mental health. stress management resources may possibly not be amply tailored to make available support to individual challenges encountered by this population. Artificial intelligence (AI) has been used for learning, gathering

information, and research purposes but its impact on counseling of computer students with physical disability is not yet known. While counselling programme and service may be within reach for students in higher institution of learning, the service may not meet the unique need of physically challenged students.

These students face several challenges and obstacles beyond mere accessibility related to the curriculum, instruction style, and assessment. Consequently, they encounter challenges related to adjustments and regulation, which affect their identity development, forcing them to develop self-advocacy skills, sometimes resigning to fate and defeat. Decreased self- esteem, self- confidence and self-concept. Regardless of the growing interest in utilization of AI, there is limited research on their effectiveness in supporting individuals with physical disabilities. There is a need therefore, to explore the potential impact of AI counselling techniques to support stress mgt among computer students with physical disability.

**Hypotheses**

There is no significant effect of Artificial Counselling Technique on stress management among computer students with physical disability

There is no significant gender effect of AI counselling Technique on stress management among computer students with disability.

There is no significant effect of AI counselling Technique on stress management among computer students with disability on the basis of level of study.

There is no significant interaction effect of AI counselling on gender and treatment on stress management among computer students with physical disability

There is no significant interaction effect of AI counselling on level of study and treatment on stress management among computer students with physical disability.

**Methodology**

The pretest posttest control group quasi-experimental research design was adopted for the study. Six hypotheses guided the study. Purposive sampling technique was used to select 98 physically challenged computer students across ten institutions of higher learning in Nigeria. There were 2 groups: Experimental groups and the Control group which were all pretested using Perceived Stress Level Scale (PSLS) designed by the researcher. The scale was used to assess the stress level before being exposed to the treatment. The experimental group was later treated with AI counselling technique which is ChatGPT oriented for 5 weeks while the control group were exposed to conventional counselling. Data collected were analyzed using percentage, mean, SD and analysis of covariance (ANCOVA).

**Results**

Table I: Socio-demographic data.

Variable	N	%	Mean	SD
Gender				
Male	42	42.9		
Female	56	57.1	1.57	.497
Total	98	100.0		
Study level				
100-200	56	57.1		
300-500	42	42.9	1.43	.497

Total	98	100.0
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Table 1 shows the demographic characteristics of the participants across gender and level of study. It shows that female computer students represent 57.1% of the participants while 42.9% represented male computer students with mean and SD of 1.57 and .497 respectively. The table also shows that computer students from 100-200 level of study accounted for 57.1% of the participants while those in 300-500 level of study accounted for 42.9% with mean and SD of 1.43 and .497 respectively. The table therefore reveal an even spread of the participants across gender and level of study.

**Hypotheses Testing**

The null hypotheses were tested using ANOCOVA as shown below.

Null Hypothesis One: There is no significant effect of Artificial Counselling Technique on stress management among computer students with physical disability

Table 1 ANCOVA Showing the Main Effect of AI Counselling Technique on Stress Management

Source	Type III SS	df	Mean Square	F	p	Partial $\eta^2$
Corrected Model	902.906	11	100.322	1.216	.302	.086
Intercept	95986.008	1	95986.008	905.122	.000	.910
Pretest	4.433	1	4.433	1.231	.347	.001
Gender	32.013	2	26.006	.100	.703	.004
Study level	43.368	2	21.684	4.409	.004	.035
Treatment	24.923	1	24.923	7.235	.003	.033
Gender * Treatment	157.929	1	157.929	1.489	.226	.016
Study level * Treatment	567.579	1	567.579	5.352	.003	.056
Gender * Study level * Treatment	135.106	1	135.106	1.274	.262	.014
Error	9544.288	87	110.980			
Total	125853.000	98				
Corrected Total	106495.647	97				

Interpretation:

Table 2 is ANCOVA showing the main effect and interaction effect of the moderating variable and AI counseling on the management of stress among the participants at  $p < .003 < .005$  The table shows that at df of 1, 97, and F-ratio=7.235 which shows there is significant main effect of treatment on stress management. The partial eta is.033 and this implies that stress management of the participants is determined by 33% of the treatment. Therefore, Hypothesis 1 is rejected.

Null Hypothesis Two: There is no significant gender effect of AI counselling Technique on stress management among computer students with disability

Table 3 ANCOVA Showing the Main Effect of Gender on Stress Management

Source	Type III SS	df	Mean Square	F	p	Partial $\eta^2$
Corrected Model	902.906	11	100.322	1.216	.302	.086
Intercept	95986.008	1	95986.008	905.122	.000	.910
Pretest	4.433	1	4.433	1.231	.347	.001
Gender	32.013	2	26.006	.100	.703	.004
Study level	43.368	2	21.684	4.409	.004	.035
Treatment	24.923	1	24.923	7.235	.003	.033
Gender * Treatment	157.929	1	157.929	1.489	.226	.016
Study level * Treatment	567.579	1	567.579	5.352	.003	.056

Source	Type III SS	df	Mean Square	F	p	Partial $\eta^2$
Gender * Study level * Treatment	135.106	1	135.106	1.274	.262	.014
Error	9544.288	87	110.980			
Total	125853.000	98				
Corrected Total	106495.647	97				

Interpretation:

The Table 3 also shows that at df of 2, 96, and F-ratio = .100 which shows there is no significant main effect of gender on stress management of the participants at  $p < .753 > .005$ . The partial eta is .001 and this implies that stress management of the participants is predicted by 1% of gender. Therefore, there is no significant main effect of gender on stress management of the participants. Hypothesis 2 is therefore accepted.

Null Hypothesis Three: There is no significant effect of AI counselling Technique on stress management among computer students with disability on the basis of level of study

Table 4 ANCOVA Showing the Main Effect of Study Level on Stress Management

Source	Type III SS	df	Mean Square	F	p	Partial $\eta^2$
Corrected Model	902.906	11	100.322	1.216	.302	.086
Intercept	95986.008	1	95986.008	905.122	.000	.910
Pretest	4.433	1	4.433	1.231	.347	.001
Gender	32.013	2	26.006	.100	.703	.004
Study level	43.368	2	21.684	4.409	.004	.035
Treatment	24.923	1	24.923	7.235	.003	.033
Gender * Treatment	157.929	1	157.929	1.489	.226	.016
Study level * Treatment	567.579	1	567.579	5.352	.003	.056
Gender * Study level * Treatment	135.106	1	135.106	1.274	.262	.014
Error	9544.288	87	110.980			
Total	125853.000	98				
Corrected Total	106495.647	97				

Interpretation:

The table 4 above also shows that at df of 2, 96, and F-ratio = 4.409 which shows there is significant effect of AI counselling Technique on stress management of the participants at  $p < .004 < .005$ . The partial eta is .035 and this implies that stress management of the participants is predicted by 35% of study level. Therefore, there is significant main effect of study level on stress management of the participants. Hypothesis 3 is therefore rejected.

Null Hypothesis Four; There is no significant interaction effect of AI counselling on gender and treatment on stress management among computer students with physical disability

Table 5 ANCOVA Showing the Interaction Effect of Gender and Treatment on Stress Management

Source	Type III SS	df	Mean Square	F	p	Partial $\eta^2$
Corrected Model	902.906	11	100.322	1.216	.302	.086
Intercept	95986.008	1	95986.008	905.122	.000	.910
Pretest	4.433	1	4.433	1.231	.347	.001
Gender	32.013	2	26.006	.100	.703	.004
Study level	43.368	2	21.684	4.409	.004	.035
Treatment	24.923	1	24.923	7.235	.003	.033
Gender * Treatment	157.929	1	157.929	1.489	.226	.016
Study level * Treatment	567.579	1	567.579	5.352	.003	.056
Gender * Study level * Treatment	135.106	1	135.106	1.274	.262	.014
Error	9544.288	87	110.980			
Total	125853.000	98				
Corrected Total	106495.647	97				

Interpretation:

The Table 5 also shows that at df of 2, 96, and F-ratio =1.489 which shows there is no significant interaction effect of AI counselling on gender and treatment on stress management of the participants at p.005. The partial eta is .016 and this implies that stress management of the participants is predicted by 16% of gender and treatment. Therefore, there is no significant interaction effect of gender and treatment on stress management of the participants. Hypothesis 4 is therefore accepted.

Null Hypothesis Five; There is no significant interaction effect of AI counselling on level of study and treatment on stress management among computer students with physical disability

Table 6 ANCOVA Showing the Interaction Effect of Study Level and Treatment on Stress Management

Source	Type III SS	df	Mean Square	F	p	Partial $\eta^2$
Corrected Model	902.906	11	100.322	1.216	.302	.086
Intercept	95986.008	1	95986.008	905.122	.000	.910
Pretest	4.433	1	4.433	1.231	.347	.001
Gender	32.013	2	26.006	.100	.703	.004
Study level	43.368	2	21.684	4.409	.004	.035
Treatment	24.923	1	24.923	7.235	.003	.033
Gender * Treatment	157.929	1	157.929	1.489	.226	.016
Study level * Treatment	567.579	1	567.579	5.352	.003	.056
Gender * Study level * Treatment	135.106	1	135.106	1.274	.262	.014
Error	9544.288	87	110.980			
Total	125853.000	98				
Corrected Total	106495.647	97				

Interpretation:

The table also shows that at df of 2, 96, and F-ratio=5.352 which shows there is significant interaction effect of AI counselling on level of study and treatment on stress management of the participants at  $p < .003 < .005$ . The partial eta is .056 and this implies that stress management of the participants is

predicted by 56% study level and treatment. Therefore, there is significant interaction effect of study level and treatment on stress management of the participants. Hypothesis 5 is therefore rejected.

### **Discussions**

The result revealed that AI counselling has significant main effect on stress management of physically challenged computer students. This finding is similar to Khawaja and Bélisle-Pipon (2023) who investigated if AI could have a positive effect in increasing access to mental health care and found that an AI as a psychotherapy tool could help with diagnoses via comprehensive data access and analyzing behavioral patterns, and that chatbot could mimic practitioner questions and subsequently make recommendations based on a user's input. Silva (2022) also reported that the use of AI could significantly positively enhance psychotherapy and reduce clinical mental health symptoms and AI counseling therapy was met with high satisfaction, engagement and retention rates. Bouhouita-Guermech, Gogognon and Bélisle-Pipon (2023) explored the challenges posed by AI just as Brisson, Bélisle-Pipon and Ravitsky (2023), examined the influence that AI wielded over health of adolescents. These earlier studies are in tandem with the submissions that AI counseling enhances the mental health and boost stress coping mechanism of persons with special needs. Khare, Khare and Chandra (2021) also had before then submitted that AI-powered counseling interventions positively impacted the mental health and stress management of computer students. This finding agrees with Singh, Singh, Sharma and Prasad (2021) who also found that gender Conclusions did not significantly impact stress levels of computer students, but study level did have a significant effect. The researchers found that the interaction effect of study level and AI counseling on stress management of physically challenged computer students was significant. These findings align with Silva (2022) in suggesting that AI counseling, as an alternative approach, can be effective for students at specific points in their academic journey. Srivastava, Saxena, & Baijal (2024) in their study, addressed the persistent concern bothering on mental health and total well-being of youth, in search of career search. Their findings support the submission that they often face considerable stress and insecurity in the course of their progression from training to employment. No significant interactive effect of gender and AI counseling was found. This finding corresponds with Singh, Singh, Sharma and Prasad (2021) who reported no significant interaction effect of gender and AI counseling, noting that works for male and female individuals. The study of Singh, Singh, Sharma and Prasad (2021) supports this finding.

### **Conclusions**

The use of AI counselling is an effective tool to manage stress among physically challenged computer students. Therefore, educational institutions should consider incorporating AI counseling services to support the mental health of their male and female students. There is a significant interaction effect between study level and AI counseling on stress management. Educational institutions should consider providing targeted support for students at different stages of their academic journey to maximize the benefits of AI counseling services. Each of AI counseling and study level has impact on stress management for physically challenged computer students. Study level and AI counseling will have more potent impact on stress management of the physically challenged computer students. No significant main effect of gender and AI counseling on stress management for physically challenged computer students was found. No significant interaction effect of gender, study and AI counseling on stress management for physically challenged computer students was found.

### **Recommendations**

Based on the results of the analysis, the following recommendations can be made:

1. Incorporating AI counselling techniques can be an effective way to manage stress among computer students. Therefore, educational institutions should consider implementing AI counselling services to support student mental health as it is effective and accessible to students.
2. There is no significant main effect of gender on AI counselling on stress management. However, it is important to take into account the unique needs of male and female students when designing stress management programme for physically challenged computer students.
3. Since the AI counselling technique was found to have significant main effect on stress management, AI counselling technique should not provide stress management resources and support to physically challenged computer students.
4. There is no significant main effect of gender and treatment on AI counselling on stress management. However, it is important to take into account the unique needs of male and female students when designing stress management programme for physically challenged computer students
5. There is no significant interaction effect of the level of student and AI counseling technique on stress management for physically challenged computer students indicates that certain AI counseling techniques is more effective for students at different levels of study  
there is significant main effect of study level on stress management

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