OBSESSIVE COMPULSIVE DISORDER AS PREDICTOR OF POST BASIC SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT IN MATHEMATICS IN ADAMAWA STATE, NIGERIA

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Abstract

This study investigated whether Obsessive Compulsive Disorder predicts Post Basic School Students' Academic Achievement in Mathematics in Adamawa State, Nigeria. One research question and one hypothesis were formulated for the study. Correlation research design was adopted. Population of the study comprised of 3,314 SS II Mathematics students using 10% paradigm. Multi-stage sampling was used to select 336 students which is the 10% of the total population. Mathematics Students' Obsessive Compulsive Disorder Questionnaire (MSOCDQ) and a student's pro-forma result were used for data collection. The MSOCDQ was validated Cronbach's alpha method was used to determine the reliability of the instrument and a reliability of 0.81 was obtained. Descriptive statistics of mean and standard deviation were used to answer the research question while, the hypothesis was tested at 0.05 level of significance using linear regression analysis. The findings of the study showed average score, which is 3.92, indicates that these students were highly when it comes to Obsessive Compulsive Disorder, hypothetically, Obsessive Compulsive Disorder predicts Post Basic schools students' academic achievement in Mathematics (r = 0.79 R-square = 0.62, β = -0.79; t = -25.23, p < 0.05). In conclusion Obsessive Compulsive Disorder is a serious and often debilitating mental health condition that can have negative impacts on various areas of an individual's life, including academic achievement in Mathematics in Adamawa State. Therefore, it was recommended that Test anxiety can be a significant challenge for individuals with panic disorder. Developing coping strategies, such as deep breathing or visualization techniques, can help reduce anxiety and improve performance on tests.

Introduction

Obsessive-Compulsive Disorder (OCD) is a psychiatric condition characterized by persistent and unwanted intrusive thoughts, images, and urges (obsessions), along with repetitive behaviors or mental acts (compulsions) intended to mitigate the distress caused by these obsessions (Krebs & Heyman, 2015). According to Hess (2014), OCD is marked by persistent, distressing thoughts or behaviors that seem beyond the individual's control. Pereira, Barros, Mendonca, and Muris (2014) describe OCD as the inability to cease focusing on a particular idea or topic, which often leads to feelings of discomfort and shame. Individuals with OCD feel compelled to fixate on thoughts they would rather avoid or to perform actions they find undesirable (Abramowitz & Siqueland, 2013).

Obsessive-Compulsive Disorder (OCD) is a profoundly troubling and disabling condition, defined by the persistence of unwanted ideas, thoughts, and impulses (obsessions) alongside ritualistic behaviors (compulsions) performed to neutralize these obsessions and alleviate anxiety (Kalafat, Kagan, Boysan, & Güngör, 2010). Torres, Cruz, Vicentini, Lima, and Ramos-Cerqueira (2016) characterize obsessions as recurrent and distressing thoughts, mental images, doubts, or impulses that generate significant anxiety or emotional distress. Compulsions, or compulsive rituals, involve repetitive behaviors performed either overtly or covertly in response to an obsession, or according to rigid rules, with the aim of reducing anxiety or preventing some feared event. A diagnosis of OCD is made when these symptoms are persistent, cause considerable distress, or significantly interfere with the individual's daily life, affecting their relationships and performance in school or work.

The American Psychiatric Association (2022) defines OCD as a condition involving obsessional and compulsive phenomena that consume excessive time, leading to distress, functional impairment, or anxiety. This disorder is characterized by repetitive, intrusive thoughts that compel individuals to engage in compulsive behaviors, such as frequent handwashing. Compared to other disorders like unipolar or anxiety disorders, OCD often persists into adulthood, potentially leading to challenges such as unemployment, difficulties in marriage, or social impairments (Krebs & Heyman, 2015). Both children and adults exhibit similar clinical presentations of OCD, and the prevalence of OCD across various ethnic groups further complicates its treatment across different cultural contexts (Shahrouri, 2017). Cultural habits can influence the manifestation of obsessions and compulsions, such as specific rituals related to cleanliness in certain ethnic groups.

Obsessive thinking can resemble symptoms associated with Attention Deficit Disorder (ADD) because students may be distracted by obsessive thoughts or may delay performing compulsive behaviors. Teachers, as Negreiros (2020) suggests, should recognize that a student displaying inattentiveness or agitation may be preoccupied with distressing obsessive thoughts or struggling to suppress a compulsive behavior, such as tapping a pencil repeatedly. Compulsive behaviors can also lead to bullying or social victimization of students with OCD. Obsessive thoughts can result in agitation and social difficulties. Although genetic factors are known to influence OCD, environmental factors also play a significant role, though they are not well understood (Krebs & Heyman, 2015). Paige (2017) notes that untreated OCD can severely impact learning, with complex rituals potentially causing attendance issues

that mimic school avoidance (Atieq, 2016). Such anxiety disorders can lead to confusion and a shift in classroom focus, hindering academic success.

French and Nesbit (n.d.) identify classroom symptoms of OCD as including: engaging in repetitive actions (e.g., retracing words), counting and recounting objects, rearranging desk items, and making frequent bathroom visits. Cognitive symptoms of OCD, such as difficulty with decision-making, inflexibility in thinking, and problems with problem-solving, may negatively impact a student's ability to learn and apply mathematical concepts. Additionally, the anxiety and stress associated with OCD can further impair cognitive functioning and academic performance. The time-consuming nature of OCD symptoms may also limit the time and energy students have for academic pursuits (Belloch et al., 2019).

In a study by Rodriguez et al. (2021), students with OCD who received Cognitive Behavioral Therapy (CBT) demonstrated significant improvements in academic performance compared to a control group, with symptom improvements correlating with enhanced academic outcomes. Yilmaz, Özcan, and Henden (2019) found that students with OCD had lower grades in Mathematics than their peers without OCD, with the severity of OCD symptoms negatively correlating with academic achievement. The study also noted more negative attitudes towards Mathematics among students with OCD. Shevlin, Hyland, Karatzias, and Bisson (2015) investigated the link between OCD symptoms and academic performance, revealing that higher OCD symptom levels were associated with lower academic performance, especially in numerical and verbal reasoning.

Similarly, Orenstein, Qadeer, Sobowale, and Vyas (2017) found that college students with OCD had lower Mathematics grades compared to their peers without OCD. These students also reported higher test anxiety and lower confidence in their mathematical abilities. Shams, Yaghubi, and Saadatjoo (2020) found that high school students with OCD had lower Mathematics grades and that the negative relationship between OCD symptoms and academic performance was partially mediated by negative attitudes towards Mathematics. Lewin et al. (2021) observed that children with OCD had lower academic performance, particularly in Mathematics and science, with the negative impact partially mediated by avoidance of certain academic tasks. Moritz et al. (2019) found that students with higher OCD symptoms had lower Mathematics grades, with the negative relationship partially mediated by negative attitudes towards Mathematics.

Bilginer et al. (2018) explored the link between OCD and academic achievement in university students, finding that those with OCD had lower academic performance in Mathematics compared to their peers. This negative relationship was partially mediated by anxiety and depression. Schuiling et al. (2016) reported that students with OCD symptoms had lower grades across various subjects, including Mathematics, with anxiety partially mediating this effect. Bellini et al. (2019) found that children with comorbid OCD and Autism Spectrum Disorder (ASD) had lower Mathematics performance compared to children with ASD alone, with anxiety mediating this relationship. Gupta et al. (2018) investigated medical students and found that those with OCD had lower academic performance in Mathematics and other subjects compared to peers without OCD, with the negative relationship partially mediated by depression. This study aims to explore how OCD predicts the

academic achievement of Post-Basic School Students in Mathematics in Adamawa State, Nigeria.

Purpose of the Study

The purpose of this study was to investigate whether obsessive compulsive disorder predicts post basic school students academic achievement in Mathematics in Adamawa state, Nigeria.

Research Question

What the level of obsessive compulsive disorder is in post basic schools students' Academic Achievement in mathematic in Adamawa State, Nigeria?

Hypothesis

The null hypothesis was formulated tested at 0.05 level of significance;

Ho_1:   Obsessive compulsive disorder does not significantly predict Post Basic Schools students' Academic Achievement in mathematic in Adamawa State, Nigeria.

Methodology

The study employed a correlational research design, aimed at determining the relationship between variables through the use of correlation coefficients. This approach involves collecting data to assess the strength of the association between two or more variables. By gathering data on multiple variables from the same group, researchers can calculate correlation coefficients to evaluate the level of correlation among these variables. The primary objective of the study was to ascertain whether Obsessive-Compulsive Disorder (OCD) predicts academic achievement in Mathematics among Post-Basic School students in Adamawa State, Nigeria.

For this study, the researchers selected a sample of 360 Post-Basic School students in Adamawa State who were enrolled in Mathematics courses. This sample size represents 10% of the total population, adhering to the guidelines established by Gall, Gall, and Borg (2007). According to these guidelines, a 5% sample is recommended for populations up to 10,000, a 10% sample for populations ranging from 2,000 to 5,000, a 20% sample for populations between 1,000 and 2,000, and a 50% sample for populations in the hundreds. When dealing with populations in the tens, the entire population may be included. In this study, a multi-stage sampling procedure was employed to select the participants.

Data were collected using a modified survey instrument, the Obsessive-Compulsive Disorder Questionnaire (OCDQ). The OCDQ consists of two sections: Section A provides instructions for completing the questionnaire, while Section B includes various items addressing the research question related to Obsessive-Compulsive Disorder. The questionnaire, containing ten items with a five-point rating scale, was supplemented by pro-forma results collected from the schools.

The validity of the questionnaire was established through content validity, and its internal consistency was measured using Cronbach's alpha, yielding a reliability coefficient of 0.83. Data analysis involved calculating means and standard deviations to describe the central tendency and variability of the data. Linear regression analysis was employed to test the hypothesis at a significance level of 0.05. Statistical analysis was conducted using Statistical Product and Service Solutions (SPSS) version 23, a widely used software program in social science research.

The researchers utilized mean and standard deviation to describe the data's central tendency and variability. Linear regression analysis was used to test whether OCD symptoms predict academic achievement. SPSS version 23 was used for statistical analysis. The decision rule for interpreting OCDQ symptoms and academic achievement involved real limit values ranging from 0 to 5. The null hypothesis was evaluated based on a p-value of ≤ 0.05: a p-value less than or equal to 0.05 indicated that the null hypothesis would be rejected, while a p-value greater than 0.05 suggested acceptance of the null hypothesis. A correlation coefficient of +1 or -1 denotes a perfect positive or negative relationship between the variables being analyzed.

Results

Research Question:

What is the level of obsessive compulsive disorder is in post basic schools students' Academic Achievement in mathematic in Adamawa State, Nigeria?

Table 1: **Mean and Standard deviation of Obsessive Compulsive Disorder and Post Basic Schools students' Academic Achievement in Mathematic**

S/N	Please indicate your level of obsessive-compulsive disorder in the following areas;	Mean	St.D	Remark
1.	Having repetitive thoughts or concerns that are not about real life problems.	4.17	0.80	HL
2.	Constantly checking that doors and windows are locked	3.95	0.87	HL
3.	Constantly cleaning and tidying up in class	4.07	0.82	HL
4.	Hoarding useless items	4.10	0.77	HL
5.	Feel relieved in the short term after repeating actions but soon felt the need to repeat them	4.00	0.81	HL
6.	Excessive praying within the school premises	3.45	1.00	ML
7.	Tapping the desk symmetrically when lesson in on-going	3.83	0.84	HL
8.	Fear of causing accidental harm to others	3.47	1.01	ML
9.	Constant repeating of words/phrases	3.82	0.76	HL
10.	Constant loss of interest in class activities	3.13	1.42	ML
	Average Mean	3.80	0.91	HL

Table 1 presents the distribution of obsessive-compulsive disorder (OCD) symptoms among Post-Basic School students in Adamawa State, focusing on their academic achievement in Mathematics. Out of the 10 items on the OCD questionnaire, items 6, 8, and 10 reflect a moderate level of OCD symptoms. In contrast, items 1, 2, 3, 4, 5, 7, and 9 indicate a high level of OCD symptoms. The average mean score of 3.80 suggests that the overall level of OCD among these students is high, highlighting a significant impact on their academic achievement in Mathematics.

Hypothesis Testing

H_{O1}: Obsessive compulsive disorder does not significantly predicts Post Basic Schools students' Academic Achievement in mathematic in Adamawa State, Nigeria

This hypothesis was tested by regressing Obsessive compulsive disorder (predictor variable) against Post Basic Schools students' Academic Achievement in Mathematics (dependent variable). Simple Linear regression statistic was used for the analysis. Tables 2a, 2b and 2c display the results respectively.

Table 2a: Model Summary of Regression Analysis between Obsessive Compulsive Disorder and Post Basic Schools students' Academic Achievement in Mathematics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.581[a]	.337	.335	7.235

Table 2a provides a model summary illustrating the relationship between Obsessive Compulsive Disorder (OCD) and Post-Basic School students' academic achievement in Mathematics. The table includes values for R, R², and adjusted R²: 0.580, 0.337, and 0.335, respectively. The R² value of 0.337 indicates that OCD accounts for 33.7% of the variance in students' academic performance in Mathematics. This means that OCD is a significant predictor of academic achievement, although 66.3% of the variance is attributable to other factors not included in the model. Table 2b further details the significance of the regression model, providing insights into the robustness and reliability of the relationship between OCD and academic achievement.

Table 2b: Summary of ANOVA of Regression between Obsessive Compulsive Disorder and Post Basic Schools Students' Academic Achievement in Mathematics

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10381.03	1	10381.03	198.33	.000[b]
	Residual	20466.03	358	52.34		
	Total	30847.06	359			

*Significant at; p < 0.05

The results presented in Table 2b indicate that significantly predicted Post Basic Schools students' Academic Achievement in Mathematics. Specifically, the statistical analysis showed that obsessive compulsive disorder predicted Post Basic Schools students' Academic Achievement in mathematics (F (1, 358) = 198.33, p = 0.000 < 0.05).

Table 2c: Summary of Regression Coefficients of Prediction between Obsessive Compulsive Disorder and Post Basic Schools students' Academic Achievement in Mathematics

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
(Constant)		9.90	3.31		2.99	.003
Obsessive Compulsive Disorder		0.79	0.06	0.58	14.08	.000*

*Significant at; p < 0.05.

Table 2c presents the forecast coefficients between the academic achievement in Mathematics of post basic school students and their obsessive compulsive disorder (OCD) status. The Beta value of 58.0% indicates that OCD can be used to predict the academic achievement of post basic school students in Mathematics. This means that OCD is a significant predictor of academic achievement in Mathematics for post basic school students ($\beta = 0.58$, $t = 14.08$, $p = 0.000 < 0.05$). Therefore, the null hypothesis of no significant prediction is hereby rejected. When a hypothesis is rejected, what does it mean?

Discussion

The findings indicate that Obsessive Compulsive Disorder (OCD) is a significant predictor of Post Basic Schools students' academic achievement in Mathematics, with a statistical analysis revealing $F(1, 358) = 198.33$, $p < 0.05$. This suggests a robust relationship between OCD and academic performance.

Several studies corroborate this relationship. Rodriguez et al. (2011) demonstrated that students with OCD who underwent Cognitive Behavioral Therapy (CBT) exhibited significant improvements in academic performance compared to a control group. Ylmaz, Özcan, and Henden (2019) observed that students with OCD had lower Mathematics grades and more negative attitudes towards the subject. Similarly, research by Shevlin, Hyland, Karatzias, and Bisson (2015), Orenstein et al. (2017), and Shams et al. (2020) found a consistent pattern: higher levels of OCD symptoms were linked to diminished academic performance, especially in Mathematics.

Further research by Lewin et al. (2011) highlighted that children with OCD symptoms showed poorer performance in Mathematics and science, with the negative impact partially mediated by avoidance of certain academic tasks. Moritz et al. (2019), Bilginer et al. (2018), and Gupta et al. (2018) also reported that OCD symptoms were associated with lower academic achievement in Mathematics and other subjects, with the adverse effects being partially mediated by factors such as anxiety, depression, and negative attitudes towards Mathematics. Bellini et al. (2019) found that children with comorbid OCD and Autism Spectrum Disorder (ASD) had reduced academic performance in Mathematics, with anxiety partially mediating the negative relationship. Hence, these studies emphasize the detrimental impact of OCD symptoms on academic performance, particularly in Mathematics, and underscore the

importance of addressing associated anxiety and negative attitudes towards the subject as part of effective OCD treatment.

Conclusion

Obsessive Compulsive Disorder (OCD) significantly negatively predicts students' academic achievement in Mathematics, a subject that demands high levels of attention to detail and concentration. This finding suggests that a lower level of OCD symptoms is associated with improved academic performance in Mathematics. However, with appropriate support and effective strategies, students with OCD can manage their symptoms and enhance their academic outcomes.

The study's implications highlight that students with OCD generally experience lower academic performance, especially in Mathematics and areas requiring numerical or verbal reasoning, compared to their peers without OCD. The severity of OCD symptoms is inversely related to academic achievement in Mathematics. This adverse relationship is partially mediated by factors such as anxiety, depression, and negative attitudes towards the subject. Additionally, students with OCD often report elevated levels of test anxiety and diminished confidence in their mathematical abilities, further impacting their academic performance. Addressing these factors through targeted interventions could potentially improve the academic achievements of students grappling with OCD.

Recommendations

The following recommendations were offered;

1. A consistent study routine can help students with OCD manage their symptoms and improve their academic performance. Establishing a regular study schedule can also help reduce anxiety and stress associated with academic tasks.
2. Students with OCD may have negative thoughts or self-doubt that can impact their academic performance. Encouraging positive self-talk can help students build confidence and focus on their strengths.
3. It's important for students with OCD to take breaks during studying or test-taking to manage their symptoms. Students should try to take regular breaks to rest their minds and manage their anxiety.
4. Using visual aids, such as diagrams or graphs, can help students with OCD better understand mathematical concepts and improve their ability to recall information.
5. Students with OCD should benefit from academic support, such as tutoring or additional classroom resources. Teachers and school administrators can work with students to develop a plan to accommodate their needs and provide additional support as needed.

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