ISSN 2321–7359
EISSN 2321–7367

Medical Science
An International Journal

Depression and anxiety: the bane of academic achievement among science students offering mathematics

Ajayi Titilope E[1], Idiong US[2]

1. Department of Mathematics, Adeyemi College of Education, Ondo, Ondo State, Nigeria. Email: titilopeapril7@gmail.com
2. Department of Mathematics, Adeyemi College of Education, Ondo, Ondo State, Nigeria. Email: idiongus@aceondo.edu.ng

Publication History
Received: 24 November 2016
Accepted: 22 December 2016
Published: January-February 2017

Citation
Ajayi Titilope E, Idiong US. Depression and anxiety: the bane of academic achievement among science students offering mathematics. *Medical Science*, 2017, 21(83), 8-15

Publication License
This work is licensed under a Creative Commons Attribution 4.0 International License.

General Note
Article is recommended to print in recycled paper.

ABSTRACT

The alarming rate of the poor performance in the academic achievement of science students offering mathematics is not encouraging. Many students who suffer from depression and anxiety are faced with the difficulty of solving academic task in mathematics. This study identified that the mood disorders especially depression and anxiety are the bane of academic achievement among a sample of 200 science students offering mathematics in Adeyemi College of Education, Ondo, Ondo State. A Structured questionnaire of twenty-four (24) items was used to collect information for the study. Statistical Packages for Social Science (SPSS) was used to run the t-test statistical tool in the data analysis. The findings show that there is significant impact of depression and anxiety as the bane in academic achievement of science students offering mathematics because the null hypothesis

© 2017 Discovery Publication. All Rights Reserved

was rejected at 0.05 alpha level of significance. The findings revealed that students' success is negatively related with depression and anxiety which allow them to be exposed to lower average point and spend minimum time on homework Suggestions and recommendations are highlighted for students, teachers, parents and government. Relaxation technique would be effective in reducing depression and anxiety in undergraduate science students offering mathematics and consequently improving their performance.

Keywords: Academic, Achievement, Anxiety, Bane, Depression

1. INTRODUCTION

Depression and anxiety are the most common psychological mood disorder that people encounter nationwide. Young people who enter tertiary education may face new social and intellectual challenges that may increase their risk of suffering depression, anxiety and stress (Swift and Wright, 2000). It is not an exception that the science students offering mathematics are faced with depression and anxiety which is a misery to some students' academic performance in the college. These psychological mood disorders are related to the same neurotransmitters as well which is one of the reasons they have similar thoughts. Depression and anxiety have their own sub-disorder and are also considered as the fraternal twins of mood disorder. According to help guide (HG) article (2016), depression is a common and debilitating mood disorder that is affecting more and more people around the world. It varies from person to person but there are some common signs and symptoms.

Cassie (2012) in his literature reviewed that anxiety is a common phenomenon of every day's life. It plays a crucial role in human life because everyone is a victim of anxiety in different ways. A little of anxiety is normal but severe anxiety can be a serious problem. Academic anxiety can become more detrimental overtime. As the student academic performance suffers, the anxiety level related to certain academic task increases (Huberty, 2012). Academic anxiety is a kind of state anxiety which relates to the impending danger from the environment of the academic institutions including teachers, certain subjects like Mathematics, English etc (Rohen Meetei, 2012).

All over the world, Mathematics is an important subject in the schools nationwide that cannot be underrated and it is relevant to our day-to-day activities. According to National Council of Teachers (2007), Mathematics as a subject is at the heart of many successful careers and lives. Iji (2009), described Mathematics as a model of thinking which encourage learners to observe, reflect and reason logically about a problem and on communicating ideas, making it the central intellectual discipline and vital tool in science, commerce, education and technology. Having established the fact that Mathematics is applied to human daily activities and also plays vital role among all students especially the science students; it is very sad to note that the performance by undergraduate science students in the recent times are not encouraging which have been attributed to the fact that majority of the undergraduate science students have been observed to be under some psychological disorder: Depression and Anxiety.

Depression is one of the emotional problems which hopelessness is its main causes. Depression is a prevalent problem among college's students across the world and has effect on student's ability to perform activities of daily life. Depression is marked by sad feelings among college students which are known as a common mental illness. National Institute of Mental Health (NIMH) found that during their college life, many students experience the first symptoms of depression. Depression makes students often feel sad and reduction in academic performance. Untreated depression usually interferes in day-to-day activities and last for a long time. Depressed people ignore their own successes and good trait while exaggerating their faults and failures.

Anxiety is defined as "a painful or apprehensive uneasiness of mind usually over an impending or anticipated ill". (Merriam Webster, 2012). Students experiencing academic anxiety feel apprehensive over academic task. Students can feel anxiety related to every academic task. Some may only feel anxiety related to test taking or other specific tasks. Anxiety is not always negative; some students can be motivated by anxiety. People with anxiety have difficulty storing and retrieving information (Nelson and Harwood. 2011). Anxiety is a normal reaction to certain situations. A little of anxiety is normal but severe anxiety can be a serious problem. Academic anxiety can become more detrimental overtime. As the student's academic performance suffers, the anxiety level related to certain academic task increases (Huberty, 2012).

A survey conducted by center for emotional health, Macquarie University in 2009 shows that depression and anxiety lead to poor academic performance and underachievement because high anxious and depressed students in year one are ten times more likely to be in bottom one-third of class by year four and highly anxious and depressed students score lower than peers on measure of Intelligence Quotient (IQ) and achievement tests in mathematics (e.g. basic skills). It also shows that depression and anxiety lead to

Ajayi Titilope E and Idiong US,
Depression and anxiety: the bane of academic achievement among science students offering mathematics,
Medical Science, 2017, 21(83), 8-15,
www.discoveryjournals.com

© 2017 Discovery Publication. All Rights Reserved

poor engagement in class because high depressed and anxious students are motivated to avoid engaging in tasks that require communication or that involve potential peer or teacher evaluation. They consequently miss the benefit of interactive learning experiences. They interpret neutral situations as threatening or dangerous and are slower to process information that contains potential threat.

Being depressed and anxious take up some capacity available for other mental tasks; which means as depth and breadth of anxious and depressed mood increases, capacity to concentrate on academic tasks and solve problem decreases. As symptoms are real, there is an increase for them to miss classes which reduces their learning opportunities and increases poor performances in their academic achievement in mathematics.

A nationwide survey conducted by American College Health Association (ACHA) on college students at second year and fourth year level in the institution and it was concluded that almost 30 percent college students that were found to be depressed and found it difficult to perform function, university counseling center survey completed in 2006 shows that 91.6% respondents was observed and investigated which reveals an increase number of students experiencing psychological problems. In the recent year, in the American university, depression is a topic of major concern so far not enabling them to be successful in their college, career, and health. As a result of these, counseling centers for students are being implemented by many institutions.

2. STATEMENT OF THE PROBLEM

There is an existing gap that learners have already experienced depression and anxiety in mathematics nationwide. Many students suffer from depression and anxiety when facing difficult academic tasks in mathematics. The focus of this research will be to identify depression and anxiety as the bane on academic achievement among science students offering mathematics because it is commonly accepted that mathematics is difficult, obscure and of little interest to certain people. Reported consequences of being anxious and depressed towards mathematics have been:

-Intellectual incapability of the students.

-Negative attitude towards mathematics among science students by avoiding the subject "Mathematics".

-Inadequate preparation on the part of the students

-Lack of qualified or experienced teachers which may lead to declination in mathematics achievement.

-Socio-economic background of the students.

3. PURPOSE OF THE STUDY

The main purpose of the study is to identify depression and anxiety, how depression and anxiety have affected science students that is, its impact on learning and how depression and anxiety can be overcome in academic achievement in mathematics among science students in Adeyemi College of Education, Ondo, Ondo State.

The objective of this study is to;

- Identify the meaning, similarities and differences between depression and anxiety
- Review the causes and symptoms of depression and anxiety in students.
- Evaluate the impact and give suggestions on how to overcome depression and anxiety and increase in their academic achievement of science students offering mathematics.

4. RESEARCH QUESTIONS

a. What are the possible causes of depression and anxiety in students towards academic achievement in Mathematics?
b. To what extent does depression and anxiety affect science students' performance in Mathematics?
c. Does depression and anxiety have negative impact on the academic achievement of science student in mathematics?
d. How can science students overcome depression and anxiety in their academic achievement?

5. STATEMENT OF HYPOTHESIS

- In order to carry out the research this hypothesis was tested:
- Ho: There is no significant impact of depression and anxiety as the bane on science students' academic achievement in mathematics.

Ajayi Titilope E and Idiong US,
Depression and anxiety: the bane of academic achievement among science students offering mathematics,
Medical Science, 2017, 21(83), 8-15,
www.discoveryjournals.com

© 2017 Discovery Publication. All Rights Reserved

6. METHODOLOGY

This study is designed to identify depression and anxiety as the bane in academic achievement in mathematics and how depression and anxiety have affected science students. The Population of the study covers four departments in the School of Science, Adeyemi College of Education, Ondo, Ondo State who offer mathematics in their various courses. The sample of this research consists of two hundred (200) students which are randomly chosen in the four selected departments. Fifty (50) students are randomly selected from each department at various levels (Degree I- IV).The instrument used by the researcher for this study is questionnaire which contains twenty four (24) items. The questionnaire will gain information about the respondents in order to know if they have experienced depression and anxiety once in their lifetime and how anxiety and depression have impact on their academic achievement in mathematics.

The Instrument written by the researcher was subjected to vetting by the supervisor and experts in the field for face and content validation of the instrument. After useful advice and suggestion, ambiguous items were replaced and omitted words were fixed. The questionnaire that was duly completed was used for the purpose of data analysis. The research questions were analyzed using mean and standard deviation while T-test was adopted to answer research hypothesis. The decision point was 2.5 mean which correspond with agree assigned value of 4.Each reply of questionnaire were recorded and tabulated

7. DATA ANALYSIS RESULTS AND DISCUSSION

7.1. Depression and Anxiety: Causes

This addresses the causes of depression and anxiety on science student academic performance in mathematics.

Table 1

Responses on the question on the possible causes of depression and anxiety in students toward academic achievement in Mathematics

S/N	Items	Mean	SD	t-cal	t-able	Remark
I	You have experienced depression and anxiety once in your lifetime.	5.00	3.42	1.79	1.96	NS
II	Depression and anxiety are double edge sword without consistent rest period	4.76	3.03	2.09	1.96	S
III	When depression and anxiety are mishandled, irregular habit begin to surface like diet changes fatigue and sleeping patterns.	4.76	3.08	2.02	1.96	S
IV	Depression and anxiety are hereditary	4.87	2.73	3.02	1.96	S
V	Loss of a love ones, separation, catastrophe, injury, and medical diagnosis (cancer, HIV etc.) lead to depression and anxiety	4.87	3.27	1.84	1.96	NS
VI	Unequal parental treatment of siblings causes depression and anxiety	5.00	3.16	2.12	1.96	S

Some responses were that not everybody has experienced depression and anxiety once in their lifetime. Inconsistent rest period, mishandling of depression and anxiety, irregular habit like diet changes, fatigue and sleeping patterns. Loss of loved ones, separation, catastrophe, injury and medical diagnosis (cancer, HIV etc) but this research does not agree that the stated factor leads to depression and anxiety, unequal parental treatment of siblings are the possible causes of depression and anxiety which agree to Student against Depression (SAD) contribution. The findings above in line with that of Anderson (2012) observe, "that the feeling of anxiety and fear interfere with manipulation and solving of mathematical problems in a wide variety of ordinary life and academic situations".

Ajayi Titilope E and Idiong US,
Depression and anxiety: the bane of academic achievement among science students offering mathematics,
Medical Science, 2017, 21(83), 8-15,
www.discoveryjournals.com

© 2017 Discovery Publication. All Rights Reserved

7.2. Depression and Anxiety: Effect on Science Students Achievement

This addresses the effect of depression and anxiety on science students' achievement.

Table 2

Response to the extent at which depression and anxiety have affected students' performance in Mathematics

S/N	ITEMS	Mean	SD	t-cal	t-table	Remark
I	As anxious and depressed mood increases capacity to concentrate on academic tasks and solve problem decreases.	4.76	2.89	2.37	1.96	S
II	Anxious and depressed students are motivated to avoid engaging in tasks that require communication, potential peer or teacher evaluation.	4.76	2.67	3.05	1.96	S
III	Highly anxious and depressed students score lower than their peers on measure of intelligent quotient (I.Q)	4.88	3.02	2.25	1.96	S
IV	In Mathematics class, you feel apprehensive over academic tasks	4.87	2.98	2.32	1.96	S
V	It is commonly accepted that mathematics is difficult, obscured and of little interests.	4.88	2.77	2.89	1.96	S
VI	Anxious and depressed students miss classes which reduce their academic achievement in mathematics	5.00	2.81	3.02	1.96	S

Some responses were that depression and anxiety have affected students' performance in mathematics because anxious and depressed mood increases capacity to concentrate on academic tasks and solve problem decreases. The research agrees that students miss classes as a result of depression and anxiety which reduce their academic achievement in mathematics. Also, highly anxious and depressed students score lower than their peers on measure of intelligent quotient (IQ). It is commonly accepted that mathematics is difficult, obscure and of little interest. So students feel apprehensive over academic task in mathematics class. Again, the findings are in conformity with Huberty (2012) that,..."as the student's academic performance suffers, the anxiety level related to certain academic task increases "It was observed that students hardly find quality time to rest, take exercise and eat balanced diet which when not adequately done could serve as bane in their academic achievement.

7.3. Depression and Anxiety: Stimulus

This addresses the negative stimulus of depression anxiety on studentsacademic achievement.

Table 3

Response to the negative impacts of depression and anxiety on students' academic achievement

S/N	ITEMS	Mean	SD	t-cal	t-table	Remark
I	Anxious and depressed students are not able to apply mathematics principles correctly, draw and interpret graph.	4.76	2.87	2.41	1.96	S
II	When I am depressed and hopeless, I am unable to think when working mathematics.	4.89	2.95	2.39	1.96	S

Ajayi Titilope E and Idiong US,
Depression and anxiety: the bane of academic achievement among science students offering mathematics,
Medical Science, 2017, 21(83), 8-15,
www.discoveryjournals.com

© 2017 Discovery Publication. All Rights Reserved

III	Depression and anxiety makes students to neglect the basic arithmetic concept in Mathematics.	5.41	3.27	2.37	1.96	S
IV	Students' failure can be related with depression and anxiety.	5.00	3.66	1.58	1.96	NS
V	When under tension, I feel uncomfortable to understand mathematics.	4.76	2.35	8.33	1.96	S

Responses show that students' failure can be related with depression and anxiety because when students are depressed and hopeless, they find it unable to think when working mathematics. Also, depression and anxiety makes students to neglect the basic arithmetic concept in mathematics. People with anxiety have difficulty storing and retrieving information (Nelson and Harwood 2011) support the research that when under tension, students feel uncomfortable to understand mathematics. This is in supportive of Students Against Depression (SAD) review that ..."they may lose interest in activities that were once pleasurable, experience loss of appetite or overreacting, have problems concentrating, remembering details or making decision and may contemplate, attempt or commit suicide, insomnia, excessive sleeping, fatigue, aches, pains, digestive problems or reduced energy may also be present". Also, students do not often visit a counselor in their college for assistance each time they are depressed and anxious which could have combated the psychological disorder.

7.4. Depression and Anxiety: Panacea

This addresses the possible panacea of depression and anxiety on students' academic achievement.

Table 4

Response on the possible panacea of depression and anxiety in their academic achievement

S/N	ITEMS	Mean	SD	t-cal	t-table	Remark
I	Cognitive therapy is an effective treatment for depression and anxiety.	5.26	2.79	3.81	1.96	S
II	You visit a counselor in your college when anxious or depressed.	5.13	3.41	1.90	1.96	NS
III	You often take quality time for exercise which combat depression and anxiety.	5.56	2.97	3.69	1.96	S
IV	You set realistic goals and take responsibilities for action and thought.	4.88	3.24	1.92	1.96	NS
	When undergoing depression and anxiety and you have interpersonal psychotherapy and drug therapy including a range of anti-depressant classes.	4.76	2.89	2.36	1.96	S
VI	Relaxation techniques can be used to manage depression and anxiety.	4.76	3.16	1.92	1.96	NS
VII	Relaxation techniques can be used to manage depression and anxiety is best managed by lifestyle choices which include: diet, sleep and exercise.	5.26	3.19	2.36	1.96	S

Responses show that depression and anxiety can be best overcome by having an interpersonal psychotherapy and drug therapy including a range of anti-depressant classes, setting realistic goals and taking responsibilities for action and thought. By lifestyle choices which include: sleep, diet, exercise, cognitive therapy and visiting a counselor in the college. The United Kingdom National Institute for Health and Care Excellence (NICE, 2009) guidelines indicated that the treatment of depression is best managed by lifestyle choices which include diet, sleep and exercise. In a review of studies on cognitive therapy and depression, Stuart .I. Rupke,

Ajayi Titilope E and Idiong US,
Depression and anxiety: the bane of academic achievement among science students offering mathematics,
Medical Science, 2017, 21(83), 8-15,
www.discoveryjournals.com

© 2017 Discovery Publication. All Rights Reserved

David Blecke and Marjorie Renfrow (2006) confirm that cognitive therapy is an effective treatment for depression and anxiety and is as effective as antidepressant or interpersonal or psychodynamic therapy. Moreover their reviews confirm the effectiveness of the combination of cognitive therapy with other forms of therapy.

7.5. Depression and Anxiety versus Academic Achievement

H_o: There is no significant impact of depression and anxiety on academic achievement among science students offering mathematics.

From Table 3, the data were obtained.

From the table above, the null hypothesis is rejected because t-calculated (2.09) was greater than t-critical (1.96) at alpha level of 0.05. This implies that there was significant relationship between depression and anxiety and academic achievement of students in mathematics.

Variable	N	Mean	SD	df	t-cal	t-table	Remark
Depression	100	3.71	1.71	198	2.09	1.96	S
Anxiety	100	3.21	0.71				

From the table above (Ho:), it can be stated that there is significant difference between depression and anxiety on the bane in science students' academic achievement offering mathematics. According to Anxiety and Depression Association of America (ADAA)....."student's success is negatively related with depression and anxiety and depressed and anxious students are exposed to lower average point and spend minimum time on homework".. The research shows that depression and anxiety have contributed greatly to the performance of students in the college which means it have negative impact on science students' academic achievement.

8. CONCLUSION

From the findings of the study, the research concluded that:

- Depression and anxiety is a common psychological trait is very rampant among adolescent and youth nowadays which have affected their individual life at a particular period of time.
- Anxiety is hereditary while depression is not hereditary.
- Unequal parental treatment of siblings causes depression and anxiety.
- Students feel uncomfortable to understand mathematics,when under tension.
- Highly depressed and anxious students score lower than their peers on measure of intelligent quotient (IQ).
- Students miss class due to depression and anxiety which reduces their academic achievement in mathematics.
- Cognitive therapy is an effective treatment for depression and anxiety.
- Students do not often visit a counselor in their college whenever they are depressed and anxious.
- Depression and anxiety is best managed by lifestyle choices which include: sleep, diet and exercise.

RECOMMENDATIONS

Based on the findings from the study, it is considered critically to give some recommendations which will reduce the present state of depression and anxiety on students' academic performance.

1. Students should be motivated to take quality time to rest so as to reduce depression and anxiety.
2. Teachers should motivate and arouse the interest of their students to ease them fromany form of depression and anxiety.
3. Parents should show love equally among their children.
4. Parents and students should be careful of several usage of drug which when not properly used may deteriorate depression and anxiety.
5. Teachers should refer those who are highly depression and anxious to a counselor for help.
6. Government should eradicate social rejection which is prone to experiencing depressed mood in adolescents.
7. Students should be encouraged to visit a counselor in their college.
8. Qualified counselor should be adequately provided in the college to assist students.

Ajayi Titilope E and Idiong US,
Depression and anxiety: the bane of academic achievement among science students offering mathematics,
Medical Science, 2017, 21(83), 8-15,
www.discoveryjournals.com

© 2017 Discovery Publication. All Rights Reserved

REFERENCES

1. Al-Qaisy, L.M. (2011). The Relation of Depression and Anxiety in Achievement Academic among group of University Students.
2. International Journal of Psychology and Counseling, 3(5), 96-100
3. Australian Psychological Society (2016). A Review of Depression diagnosis & Management.www.psychology.org.au Retrieved 2016 – 05-22
4. Beck, A.T. (1976). Cognitive Therapy and the Emotional disorders. New York: International University Press.
5. Beck. A.T. (1983). Cognitive Therapy of Depression: New Perspectives. In P.J .Clayton, & J. E. Barett (Eds), Treatment of Depression. Old Controversies and New Approaches (pp 265 - 284). New York: Raven Press.
6. Busari,A.O.(2012).Evaluating the Relationship between Gender, Age, Depression and Academic Performance among Adolescents. Scholarly Journal of Education, 1, 6-12
7. Cohen, A. (2004). Test Anxiety and Its Effect on the Personality of Students with Learning Disabilities. http://www.thefreelibrary.com/test+anxiety+and+its+effect+on+the+personality+of+students+with+...a0122258760
8. Daniel K.Hall-Flavin, M.D (2014). Depression in Adults, NICE Clinical Guideline. Depression facts psychiaty.wustl.edu; Retrieved on 2015-11-24
9. Douglas A. Mata, Marco A. Ramos, Narinder Bansal Ridakhan, Constance Guille, Emmanuele Di Angelantonio & Srijan Sen (2015). "Prevalence of Depressiom& Depressive Symptoms Among Resident Physician: (22) 2373 – 2383
10. Heiligenstein, E., & Guenther, G (1996). Depression and Academic Impairment in College Students. Journal of American College Health, 45(2), 59- 64(1996).
11. Lindert J. Von Ehrenstein OS, Grashow R, Galg Braehler E, Weisskop FMG (April 2014). "Sexual &Physical Abuse in Childhood is associated with Depression &Anxiety over the Life course Systematic Review & Metaanalysis" Int J Public health 59(2): 359 -72
12. Loveleena Rejeev (2013). Aaron Beck's Cognitive Behaviour Theory.buzzle.com
13. Melinda smith, M.A., Joanne. Segal. Ph.D (2016). Help guide article. www.helpguide.org/art
14. Merriam Webster. (2012). Anxiety. In Merriam-Webster Online Dictionary, Retrieved from http://www.merriamwebster.com/dictionary/anxiety.
15. McCarthy, J., Downes, E.J., & Sherman, C.A. (2008). Looking back at adolescent depression: A Qualitative Study. Journal of Mental Health Counselling 30(1), 49-68
16. NIMH (2012). National Institute of Mental Health. Revised 2012. NIMH Publication No.11- 4266(2012)
17. Owens, M., Stevenson, J., Hadwin, J.A., & Morgate, R. (2012). Anxiety and Depression in Academic Performance. An Exploration of the
18. Mediating Factors of Worry and Working Memory School Psychology International. doi:10.1177/0143034311427433
19. Rana, R.A., & Mahmood, N. (2010). The Relationship between Test Anxiety and Academic Achievement Bulletin of Education and Research, 32, 63–74
20. Rohenmeetei. (2012). A Critical Study of Impact of Academic Anxiety on Academic Achievement of Class Ixth Students. http://.www.scribd.com/doc/23767970, A-Critical-Study-of-Impact-of-Academic-Anxiety-on-Academic-Achievement-of-class-Ixth-Students-Bareilly.
21. Shumaila Khurshid (2015). Effects of Depression on Students' Academic Performance.
22. Stuart, J., Rupke, M.D, David Blecke, M, Div. M.S.W, & Majorie Renfrow M.D. (2006). Cognitive Therapy for Depression. American Family Physician 73, 83-86
23. Tobias, S. (1979). Anxiety Research in Educational psychology. Journal of Education Psychology, 71, 573-582. http://dx.doi.org/10.1037/00220663.71.5,573
24. World Health Organization (WHO), 2012. World Sucide Prevention Day 2012. http://www.who.int/mediacentre/events/annual/world suicide_prevention_day/en/Accessed 16.6 2012

Ajayi Titilope E and Idiong US,
Depression and anxiety: the bane of academic achievement among science students offering mathematics,
Medical Science, 2017, 21(83), 8-15,
www.discoveryjournals.com

© 2017 Discovery Publication. All Rights Reserved