



Original Research Article

## ASSESSMENT OF THE PREVALENCE OF DEPRESSION AND THE USE OF ANTIDEPRESSANTS IN A STUDY POPULATION

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### ABSTRACT

The World Health Organization (WHO) has reported that there is an increasing burden of depression and other mental health conditions globally. WHO global health estimate for depression reports a prevalence of 5.4% in Sub-Saharan Africa. Pharmacological therapy still remains the most popular treatment for diagnosed depression. The aim of this study was to determine the prevalence of clinically diagnosed depression and outcomes of antidepressants among final year undergraduate students in a Federal University. A descriptive cross-sectional study was carried out at University of Benin, Benin City. A validated questionnaire was distributed to the 319 final year clinical students of the College of Medicine, School of Dentistry and Faculty of Pharmacy. Data obtained were organized and analysed with Microsoft Excel and SPSS version 25. Descriptive statistics was done; frequencies and percentages were used to summarize variables of interest. Ethical considerations were observed. All the questionnaires used were valid for analysis. About 90.0% of the respondents were knowledgeable about depression. Symptoms of depression were reported in 20.0% of the respondents with 16.6% having moderate symptoms of depression and 3.4% having moderately severe symptoms of depression. The same 20.0% used antidepressants and 14.7% did not adhere to their regimen. Side effects were experienced by majority of respondents (16.3%) on antidepressants. There was a low prevalence of depression in the study population. Adherence to drug therapy was poor. Side effects to treatment were reported by majority of students receiving antidepressants. Majority of patients claim to be better now that they are using antidepressant treatment as the symptoms of the disease are resolving.

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### INTRODUCTION

Globally, there is an increasing burden of depression and other mental health conditions. The World Health Organization (WHO) in January 2020 estimated that "more than 264 million people of all ages suffer from depression" [1]. In Africa, about 29.19 million people (9% of 322 million) suffer from depression,

with over 7 million in Nigeria (3.9% of 322 million). WHO global health estimate for depression reports a prevalence of 5.4% in Sub-Saharan Africa. Depression was found to be more common among women than men (5.7% vs 4.8%) and higher in the rural areas of Nigeria than in the urban areas (7.7% vs 4.2%) [2]. Prevalence of major depression among university students in

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West Africa is 25.2% [3]. The disease usually manifests as feelings of sadness, loneliness and mental breakdown. The reduced levels of serotonin, norepinephrine, and dopamine are the main factors responsible for the generation of depressive symptoms.

Pharmacological therapy still remains the most popular treatment of diagnosed depression [4]. Antidepressants are safe and effective but have a slow onset of action. Delayed onset of action is related to adaptive changes of 5-HT receptors such as desensitization of auto receptors [5]. Mono Amine Oxidase Inhibitors (MAOIs) was the first class of antidepressant drugs available but are rarely used because they have many side effects and also have serious interactions with other drugs and foods containing tyramine. Tri-Cyclic Antidepressants (TCAs) are also not popular anymore due to their adverse effects. Selective Serotonin Re-uptake Inhibitors (SSRIs) examples include; fluoxetine, fluvoxamine, paroxetine, sertraline, citalopram, escitalopram are now the most commonly prescribed antidepressant drugs.

Other groups of antidepressants include; Noradrenaline - Dopamine Re-uptake Inhibitors (NDRIs) e.g. amineptine, bupropion; Selective Noradrenaline Re-uptake Inhibitors (NARIs) e.g. reboxetine, maprotiline and viloxazine; Serotonin - Noradrenaline Re-uptake Inhibitors (SNRIs) e.g. duloxetine, venlafaxine, desvenlafaxine and milnacipran; Noradrenergic Specific Serotonergic Antidepressants (NaSSAs) e.g. mirtazapine and Serotonin Modulators and Stimulators (SMSs) e.g. vortioxetine [6].

Since depression is a debilitating mood disorder which causes impairment in educational and social activities, there is need to evaluate the prevalence and treatment of this mental breakdown among undergraduate students.

The aim of this study was to determine the prevalence of clinically diagnosed depression and outcomes of antidepressants among final year undergraduate students of the University of Benin.

## METHODS

### Study Design

The study was a descriptive cross-sectional study aimed at evaluating the prevalence of clinically diagnosed depression and outcomes of antidepressants among undergraduate pharmacy, medical and dentistry students.

### Setting

The study was carried out in University of Benin, Benin City, Edo State. This University is one of the first generation Federal Universities in Nigeria, it was established in 1970. It has two campuses located in Ugbowo and Ekehuan.

### Study Population

The research was carried out among final year pharmacy, medical and dentistry students of the University of Benin, Benin City.

### Sample Size Determination

Due to the manageable population size of the target population, all the students (319) were given equal opportunity to be included in the study.

Any research performed on this sample should have high internal and external validity, and be at no risk of sampling bias.

### Inclusion Criteria

- Male and female final year pharmacy, medical and dentistry undergraduate students
- Final year students who live in school hostels and outside the campus.

### Exclusion Criteria

- Postgraduate students as well as part-time students were not involved in the study.
- Students of other levels other than final year were not included in this study.

### Instrument for Data Collection

A validated questionnaire which consists of six sections was used. Section A contained questions about the respondents' social demographic characteristics, Section B contained questions about knowledge of clinical depression, and Section C was the Patient Health Questionnaire (PHQ- 9) diagnostic validated screening instrument for symptoms of depression. Section D contained questions about use of antidepressants, Section E contained questions about adherence to antidepressant prescription and Section F contained questions about side effects to drug therapy.

A pilot study was done among pharmacy students in lower levels and Cronbach Alpha test was done to test the reliability of the questionnaire. A Cronbach Alpha value of 0.75 was obtained indicating acceptable internal consistency.

### Data Collection

Data was collected using self-administered questionnaires, retrieved questionnaire were checked for clarity, consistency and completeness.

### Data Quality Control

Completeness and consistency of the collected data was achieved by making frequent checks on the data collection process.

### Data Analysis

Completed questionnaires were sorted according to faculty and college. Responses gotten were entered into a Microsoft Excel spreadsheet. The responses were copied to Statistical Package for Social Science (SPSS) version 25 for descriptive analysis. Descriptive statistics was done; frequencies and proportions were used to summarize variables of interest.

### Ethical Approval

Permission to carry out this study was obtained from the Dean of Student Affairs, University of Benin. Objectives of the study

were described to each participant before administration of the questionnaire. Verbal consent was obtained from each respondent before administration of the questionnaire. Confidentiality was maintained throughout the course of the study by coding the questionnaires.

## RESULTS

### Response Rate

A total of three hundred and nineteen (319) respondents were included in this study. All the questionnaires distributed were properly filled giving a response rate of 100.0%.

There were 193 females, majority ( $n=213$ , 66.8%) of the respondents were within the age range of 19 to 25 years, 113 of them were from Medicine, 25 were from Dentistry and 181 were from Pharmacy. A total of 106 of them resided in the school hostel. Details of the socio demographic characteristics of respondents are illustrated in Table 1.

### Knowledge of Clinical Depression

Although 90.0% of the respondents had good knowledge about depression, only 20.0% reported to have been diagnosed of depression. Details of knowledge of symptoms of depression are illustrated in Table 2.

### Symptoms of Depression Using the PHQ-9 Scoring for Depression

Of the 319 respondents, 53 (16.6%) respondents with a total score  $>10$  had moderate symptoms of depression, while 11 (3.4%) respondents with a total score  $>15$  had moderately severe symptoms of depression. While the remaining 255 respondents had scores less than 5, thus, cannot be said to have depression.

### Use of Antidepressants

On the use of antidepressants, 64 (20.0%) of the respondents agreed that they were prescribed some of the listed antidepressants. Details are illustrated in Table 3.

### Adherence to Antidepressants

Self-reported adherence status to the antidepressants was poor, only 3 (4.7%) of the respondents diagnosed with depression agreed to have taken their medications as prescribed, 47 (73.4%) reported to have skipped doses and 7 students said they sought advice from their physician or pharmacists when they skipped doses of antidepressants.

Concerning side effect and outcome, 16.3% of the respondents on antidepressants reported having some side effects including feeling agitated, feeling sick, indigestion and headache. About 19.1% experienced improvement in their condition following adherence to antidepressant regimen while the condition of 0.9% of the respondents who did not adhere got worse. Side effects reported are illustrated in Table 4.

## DISCUSSION

University students are equally exposed to the predisposing factors of mood disorders including depression. Tertiary level of education is perceived to be a special stage of achievement in the society and a specific developmental milestone. This may trigger depression and other forms of psychological distress for students battling with academics, psychosocial, emotional, interpersonal stress [7]. The level of knowledge of clinical depression in this study was higher than the 66.5% reported in a previous study in the same study site [8].

Prevalence of depression in these students was lower than the pooled prevalence of depression amongst post-secondary Nigerian students which was 26% (range from 4.0-71.3%) based on a random-effects model [9]. Other prevalence rates include; 17.4% reported by Sudi, et.al [10], 39.0% from medical students in a University in Malaysia [11] and 28.2% reported from a University in Ethiopia [12].

This study reported moderate depression and moderately severe depression; this is similar to another study which reported a 25.2% prevalence of depression amongst university students in West Africa [3]. Moderate depression, also known as Major Depressive Disorder (MDD) with moderate severity, is a common mental health condition marked by ongoing sadness, hopelessness, and a loss of interest or enjoyment in activities. It lies in the middle of the depression severity spectrum, with mild and severe depression on either side [13].

On the other hand, moderately severe depression, which is also referred to as moderate anxiety, is a mental health condition marked by ongoing, intense, and debilitating feelings of sadness and hopelessness as well as a loss of interest or pleasure in once-pleasurable activities. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) criteria are typically used to make the diagnosis. It belongs to the major depressive disorder subtype. These findings are contrary to reports from students in another African university, 31.1% of the respondents had borderline depression while 14.4% of the participants had mild depression, 9.9% had moderate depression and 4% had severe depression. This study used another diagnostic validated screening instrument for symptoms of depression called the Beck Depression Inventory (BDI-II) [12]. A systematic review and meta-analysis of depression prevalence amongst Nigerian students reported the use of different instruments; 2 studies used Beck Depression Inventory (BDI), 3 studies used the Depression Anxiety Stress Scale (DASS), 3 studies used the Hospital Anxiety and Depression Scale (HADS), 2 studies used the Mini-International Neuropsychiatric Interview (MINI), 3 studies used the Patient Health Questionnaire (PHQ-9), and 2 studies used Zung's Self-Rating Depression Scale (SDS) [9].

All the respondents with diagnosed depression in this study agreed that they were prescribed some of the listed antidepressants but adherence to the regimen was poor. Common measures of medication adherence include patient self-report adherence assessment, electronic monitoring, pill count, and refill records. Adequate antidepressant adherence was defined as taking  $\geq 80\%$  of the prescribed doses at 6 and

**Table 1:** Social Demographics of Respondents

Factor	Group	Frequency	Percentage (%)	$\chi^2$
Age (years)	19 – 25	213	66.8	176.32
	26 – 30	82	25.7	
	> 30	24	7.5	
Mean age	28.5±6.8			
Gender	Female	193	60.5	14.07
	Male	126	39.5	
Religion	Christianity	257	80.6	329.33
	Islam	53	16.6	
	Other religion	9	2.8	
Faculty	Medicine	113	35.4	115.06
	Dentistry	25	7.8	
	Pharmacy	181	56.7	
Place of Residence	School hostel	106	33.2	130.39
	JSQ/SSQ	53	16.6	
	Osasogie	117	36.7	
	Ekosodin	12	3.8	
	BDPA	19	6.0	
	Others	12	3.8	

**Table 2:** Knowledge of Clinical Depression

Question	Response			$\chi^2$
	Yes (%)	No (%)	Mean SD	
Do you know what depression is?	287 (90.0)	32 (10.0)	1.9±0.32	203.84
Have you been diagnosed of clinical depression?	64 (20.0)	225 (80.0)	0.7±0.43	114.361
Do you experience loss of pleasure during activities?	36 (11.3)	283 (88.7)	1.0±0.0	191.251
Do you have difficulty sleeping at night?	64 (20.0)	255 (80.0)	1.2±0.42	114.361
Do you experience changes in appetite?	64 (20.0)	255 (80.0)	0.8±0.42	114.361
Do you have the feeling that you are going to fail in your exams?	191 (60.0)	128 (40.0)	0.4±0.52	12.442
Do you have trouble concentrating while your lecturer is in class?	64 (20.0)	255 (80.0)	0.8±0.42	114.361
Do you move or speak too slowly sometimes?	64 (20.0)	255 (80.0)	0.8±0.42	114.361
Do you feel a change or a drop in your mood	96 (30.0)	223 (70.0)	0.7±0.48	50.561
Do you sometimes have suicidal thoughts?	96 (30.0)	223 (70.0)	0.3±0.37	50.561
<b>Overall</b>	<b>64 (20.0)</b>	<b>255 (80.0)</b>	<b>1.4±0.38</b>	<b>114.361</b>

**Table 3:** Use of Antidepressants

Questions	Response		
	Yes	No	$\chi^2$
Have you ever heard of an antidepressant?	319	0	0.000
Have you ever taken an antidepressant?	40	279	114.361
If yes, which of the following antidepressants have you taken?			
Amitriptyline (Amitriptyline hydrochloride 25mg)	15	304	32.245
Ascipram (Escitalopram 10mg)	10	309	114.361
Setral (sertraline)	15	304	203.804
Flutex (fluoxetine 20mg)	64	255	114.361
<b>Overall</b>	<b>64</b>	<b>255</b>	<b>114.361</b>

**Table 4:** Side effects and outcome of antidepressants, n=64

Questions	Response			
	Yes	No	No response	$\chi^2$
Have you experienced any side effects with the use of antidepressant?	52	0	267	0.000
If yes, which of these side effects have you experienced?				
Feeling agitated, shaking or anxious	38	0	281	0.000
Feeling of being sick.	18	0	301	0.000
Indigestion and stomach ache	34	0	285	0.000
Diarrhea or constipation	34	0	285	0.000
Dizziness and not sleeping well	16	0	303	0.000
Difficult in sleeping (insomnia) and not feeling very sleepy.	25	198	96	120.382
Headache and sexual dysfunction	11	191	117	12.442
Does your condition improve after taking the antidepressant prescribed to you by your physician?	61	223	93	186.821
Does your condition get worse after taking your medication?	3	222	94	186.821
Do you feel the reason why you are not experiencing most of your symptoms is as a result of the medication prescribed to you by your physician?	64	191	64	12.442
<b>Overall</b>	<b>32</b>	<b>93</b>	<b>194</b>	<b>12.442</b>

and 12 weeks [14]. The findings from a systematic review and meta-analysis on factors associated with non-adherence to antidepressant medication in adults revealed that gender, educational status, income level, marital status, and area of residence did not significantly predict non-adherence to antidepressants [15]. Adherence to antidepressant medication prescriptions can be challenging for many individuals with depression. Several factors contribute to non-adherence and understanding these factors is important for improving adherence in order to achieve treatment outcomes. Reported reasons for non-adherence to drug therapy include treatment cost, side effects, delayed efficacy, stigmatization and forgetfulness [16, 17]. Adherence to medication can be improved with mobile applications which appeals to age group of this study population [18]. Other recommendations include; patient focused interventions such as improved access to

mental health care, adequate history taking, regular measurement of depressive symptoms and adverse effects, psychoeducation. Drug focused intervention include simplified individually tailored antidepressant regimen, adherence promotion and monitoring [14].

Side effects of antidepressants were reported by most of the respondents who had depression. Symptoms of depression which includes feeling sick, indigestion, stomach ache, diarrhea, dizziness, insomnia, headache, sexual dysfunction were reported to have declined as a result of antidepressant treatment. Interventions aimed at promoting adherence should involve regular monitoring of side effects to medication and symptoms of depression with validated clinical scales, since poor adherence is strongly associated with poor therapeutic outcomes and intolerance to drug regimen.

### The Scope and Limitation of the study

The intention of the study was not to provide an intervention, but an overview of the prevalence of clinical depression and outcomes of antidepressants.

The study was limited to final year undergraduate students. Further studies may include students from other levels and departments of the University.

### CONCLUSION

There was a high knowledge about depression in this study. There are students diagnosed of depression and on antidepressant treatment in the study population. Adherence to drug therapy was poor, side effects to treatment were reported by majority of students receiving antidepressants. Majority of patients claim to be better now that they are using antidepressant treatment as the symptoms of the disease are resolving.

There is a need for more resources to be channeled into research and development of more effective and safe antidepressants with faster onset of action.

The University Management should increase her support to the relevant stake holders to drive education and advocacy campaigns about mental health. This will encourage staff and students to identify signs of depression on time and to seek professional help either for themselves or their colleagues.

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### CONFLICT OF INTEREST STATEMENT

There is no potential conflict of interest or any financial or personal relationships with other people or organizations that could inappropriately bias the conduct and findings of this study.

### REFERENCES

- World Health Organization. Factsheet on depression. Geneva. WHO 2020. Available at <https://www.who.int/en/news-room/factsheets/detail/depression>. Accessed on August 11, 2023.
- Gbadamosi IT, Henneh IT, Aluko OM, Yawson EO, Fokoua AR, Koomson A, Torbi J, Olorunnado SE, Lewu FS, Yusha'u Y, Keji-Taofik ST, Biney RP, Tagoe TA. Depression in Sub-Saharan Africa. *IBRO Neuroscience Reports*; 12, 2022: 309-322.
- Dabana A, Gobir AA. Depression among students of a Nigerian University: Prevalence and academic correlates. *Archives of Medicine and Surgery*, 3, 2018:6-10.
- Rush AJ, Trivedi MH, Wisniewski SR, Nierenberg AA, Stewart JW, Warden D, Niederhehe G, Thase ME, Lavori PW, Lebowitz BD. Acute and longer-term outcomes in depressed outpatients requiring one or several treatment steps: a Star\*D report. *American Journal of Psychiatry*, 163, 2006: 1905–1917.
- Lang UE, Borgwardt S. Molecular Mechanisms of Depression: Perspectives on New Treatment Strategies. *Cell Physiology and Biochemistry*, 31, 2013: 761–777.
- Sternberg BS, Wienclaw RA. Antidepressants. *Gale Encyclopedia of Mental Health*, 4th Edition, 2019 pp108-110.
- Pittenger C, Duman RS. Stress, depression, and neuroplasticity: a convergence of mechanisms. *Neuropsychopharmacology*, 33, 2008: 88–109.
- Osahon PT, Ighodalo IF. Knowledge and Perception of Major Depression among Full-Time Undergraduate Clinical Students in a Federal University. *Nigerian Journal of Pharmaceutical and Applied Science Research*, 10(2), 2021: 6-12.
- Cui S, Ajayi B, Egonu R, Kim E. A Systematic Review and Meta-Analysis of Depression Prevalence amongst Nigerian Students Pursuing Higher Education. *Medical and Clinical Reviews*; 8(9), 2022:134
- Sudi R, Chang WL, Arshad NH, Zainal Abidin SN, Suderman U, Woon, LS. Perception of current educational environment, clinical competency, and depression among Malaysian medical students in clinical clerkship: a cross-sectional study. *International Journal of Environmental Research and Public Health*, 19, 2022: 162-74.
- Said AH, Azmi MA, Hanapiah HM, Abdullah AW, Shalihin ME. Prevalence of Depression and its Associated Factors among Medical Students in International Islamic University Malaysia. *Medical Journal of Malaysia*, 20, 2020: 13–18.
- Ahmed G, Negash A, Kerebih H. Prevalence and associated factors of depression among Jimma University students. A cross-sectional study. *International Journal of Mental Health Systems*, 14, 2020:52
- American Psychiatric Association. Diagnostic and Statistical manual of mental disorders. 5th edition (DSM-5). Available at <http://www.psychiatry.org/practice/dsm>. Accessed on August 24, 2023.
- Solmi M, Miola A, Croatto G, Pigato G, Favaro A, Fornaro M. How can we improve antidepressant adherence in the management of depression? A targeted review and 10 clinical recommendations. *Brazilian Journal of Psychiatry*, 43 (2), 2021: 1-7.
- Muhammad N, Ullah SR, Nagi TK. Factors associated with Non-adherence to Anti-depressant Medication in Adults: A Systematic Review and Meta-Analysis. *Cureus* 15(4), 2023: 1-9.
- Vahia IV, Cohen CI. Side effects of atypical antipsychotics: clinical relevance in the elderly. *Current Psychiatry*, 15(2), 2016: 42-47.

17. Sirey JA, Bruce ML, Alexopoulos GS. Perceived stigma as a predictor of treatment discontinuation in young and older outpatients with depression. *American Journal of Psychiatry*, 158(3), 2001: 479-481.
18. Osahon PT, Mote LA, Ntaji VI. Assessment of the impact of medPlan, a medication reminder mobile application, in glaucoma patients in Benin City, Nigeria. *Tropical Journal of Pharmaceutical Research*, 19(12), 2020: 2677- 2682.