

# Psychiatry and Psychological Disorders

## Research Article

### Improving Detection of Depression at Primary Health Care Settings in Ogun State, Nigeria

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#### Abstract

One of the commonest mental health conditions managed in primary health care (PHC) is depression, with nearly 10% of all primary care consultations being related to depressive disorders. However, the detection of depression by PHC workers in developing countries remains markedly low. Routine screening for depression at the PHC level has the potential to improve the detection of depression. This study was undertaken to enhance the detection of depression through systematic screening in PHC settings in Ogun State, Nigeria.

#### Methodology

This study was conducted in 20 primary health care (PHC) centres across two randomly selected senatorial districts (Ogun West and Ogun Central) in Ogun State, Nigeria. The Patient Health Questionnaire-2 (PHQ-2) and the depression module of the mental health Gap Action Programme Intervention Guide (mhGAP-IG) were used to screen for depression among consenting patients who met the inclusion criteria in the designated PHC centres. A PHQ-9 score of  $\geq 10$  was used to confirm the diagnosis of depression. Data were analysed using the Statistical Package for the Social Sciences (SPSS) version 21.0. Descriptive statistics were summarised using frequencies, means, standard deviations, and percentages, while comparisons of quantitative variables were performed using the independent samples t-test. Statistical significance was set at  $p < 0.05$ .

#### Results

Out of the 493 patients screened for depression, 26.8% met the criteria for a diagnosis of depression. The mean depression score in Ogun West, where screening was conducted using the PHQ-2 and mhGAP-IG, was significantly higher (19.8) than that observed in Ogun Central (14.5) ( $p = 0.001$ ). Most of the identified cases were of mild severity (50.8%). Females constituted the majority (62.3%) of the participants diagnosed with depression.

#### Conclusion

This study has demonstrated the synergistic screening effect of the PHQ-2 and mhGAP-IG manual in improving the detection of depression in primary health care settings in Ogun State, Nigeria. Strategies aimed at enhancing the recognition and management of depression, such as mental health training focused on depressive disorders and the routine screen-

ing of patients using these tools, should be incorporated into the routine service package at the primary health care level, as these measures are likely to improve the detection of depression.

**Keywords:** Depression, Screening, Primary Health Care Centres, Ogun state, Nigeria.

## Introduction

One of the major contributors to the global burden of disability is depression, and this constitutes a significant public health challenge. Within the healthcare system, primary care settings serve as the frontline for the management of depressive disorders, with General Practitioners (GPs) often representing the first point of clinical contact for most symptomatic individuals [1]. Empirical evidence indicates considerable variability in the prevalence of depression in general outpatient settings, with reported rates ranging from 11.4% to 59.6%. Notably, most of these cases are characterized by mild depressive symptomatology [2,3]. Despite the predominance of mild presentations in outpatient settings, the associated functional impairment remains substantial. Evidence suggests that even subthreshold or mild depressive states may result in significantly greater functional disability compared with non-depressed populations, with disability levels reported to be up to three times higher [4]. Furthermore, a growing body of literature has demonstrated significant associations between depressive disorders and various sociodemographic factors, many of which influence the onset, severity, and persistence of depression among outpatient populations [2,5,6]. Depression is recognized as one of the most common chronic conditions encountered in primary care; however, it frequently remains unrecognized [7]. One of the major challenges in diagnosing depression in these settings is the tendency for patients to present predominantly with somatic complaints rather than psychological symptoms, thereby complicating accurate diagnosis [8]. Such somatic presentations occur across diverse cultural contexts and contribute significantly to the under-recognition of depression in routine clinical practice [9].

There is substantial evidence indicating that the prevalence of depression is particularly high within primary healthcare settings [10,11]. A large multinational study involving participants from 14 countries reported that approximately 24% of individuals attending primary care facilities met the diagnostic criteria for depression [12], with similar findings reported in African populations [13]. Depression also constitutes a significant proportion of primary care consultations, with nearly 10% of visits associated with depressive symptoms, underscoring its considerable contribution to the workload of primary healthcare services [14].

Although most individuals with depression are managed within primary care settings [15], recognition rates remain suboptimal. Studies conducted in both high-income countries and low- and middle-income countries (LMICs) consistently report inadequate recognition of depression [16,17]. In high-in-

come countries, more than half of depression cases remain undiagnosed [18], while detection rates are even lower in LMICs [13]. For instance, research conducted in rural Ethiopia demonstrated that over 95% of individuals with probable depression were neither identified nor provided with appropriate treatment [19]. Although recognition alone does not guarantee treatment, it represents a crucial first step toward facilitating access to appropriate care [20]. Poor recognition rates also impede ongoing efforts to integrate mental health services into primary healthcare systems [19]. Addressing barriers to recognition among primary healthcare providers is therefore essential, particularly given evidence that effective treatment of depression improves health outcomes and is cost-effective [21]. This underscores the need for comprehensive and coordinated strategies aimed at improving the recognition and management of depression within primary care settings [22].

Several interventions have been developed to improve the recognition of depression by addressing system-level barriers, clinician competencies, and patient-related factors [18,21,23,24]. These interventions include routine screening, clinician training programmes, implementation of clinical guidelines, case management approaches, collaborative care models, and stepped-care interventions [25–28]. Evidence from previous studies, predominantly conducted in high-income countries, suggests that multifaceted and coordinated interventions, particularly those incorporating screening tools and chronic care models, are most effective in improving recognition rates in primary healthcare settings [29]. Systematic reviews further indicate that interventions combining clinician education, nurse-led case management, and enhanced collaboration with mental health specialists yield the most favourable outcomes [27].

Extensive research, including systematic reviews and meta-analyses, has evaluated the effectiveness of these interventions, particularly screening strategies, in improving the recognition of depression [21,23]. In Western countries, prevalence estimates of depression in primary care typically range from 15.3% to 22%, while studies conducted in Nigeria report prevalence rates ranging between 10% and 20% among primary care attendees [30–32].

Despite this significant burden, accurate diagnosis by non-specialist healthcare providers remains challenging in Nigeria. Evidence suggests that primary care physicians may fail to identify depressive symptoms in approximately 30% to 50% of affected individuals [33]. Nonetheless, task-shifting approaches have shown promise, with studies demonstrat-

ing that non-physician healthcare workers, including nurses and community health officers, can be effectively trained to provide psychosocial and pharmacological interventions for depression under specialist supervision [31,32,34].

In Ogun State, Nigeria, the Federal Neuropsychiatric Hospital, Aro, Abeokuta, has implemented mental health services within selected primary healthcare facilities over the past fifteen years. Training of primary healthcare workers was conducted using the World Health Organization's mental health Gap Action Programme Intervention Guide (mhGAP-IG). However, findings from the Aro programme revealed persistent challenges in the recognition and management of depression, with relatively few cases identified by trained personnel [34].

Routine screening for depression in primary care settings has the potential to significantly improve recognition and reduce the adverse consequences associated with untreated illness. The introduction of brief and reliable screening instruments such as the Patient Health Questionnaire-2 (PHQ-2) and Patient Health Questionnaire-9 (PHQ-9) has facilitated this process. These instruments are easy to administer, time-efficient, and demonstrate good sensitivity and specificity in primary care settings [35]. Consequently, barriers such as limited consultation time and clinician discomfort in addressing emotional concerns can no longer sufficiently justify the failure to recognize depressive symptoms.

In Ogun State, there is limited research examining the effectiveness of screening and recognition strategies for depression within primary healthcare settings. This study was therefore undertaken to improve the detection and management of depression through systematic screening based on the mhGAP-IG framework among patients attending primary healthcare facilities in Ogun State, Nigeria.

## **Methods**

This study was conducted at Primary Health Care (PHC) centres across Ogun State, Nigeria.

Ogun State is one of the 36 states in Nigeria and is divided into three senatorial districts: Ogun Central, Ogun East, and Ogun West. Ogun Central consists predominantly of the Egba ethnic group and comprises six Local Government Areas (LGAs): Abeokuta North, Abeokuta South, Ewekoro, Ifo, ObafemiOwode, and Odeda. Ogun West consists predominantly of the Yewa ethnic group and comprises five LGAs: Ado-Odo/Ota, Imeko-Afon, Ipokia, Yewa North, and Yewa South. Ogun East senatorial district consists predominantly of the Ijebu and Remo ethnic groups and includes nine LGAs: Ijebu East, Ijebu North, Ijebu North-East, Ijebu Ode, Ikenne, Odogbolu, Ogun Waterside, Remo North, and Sagamu.

Ogun State has a population of over five million people and comprises twenty (20) LGAs, which are further grouped into four socio-political zones: Egba, Yewa, Remo, and Ijebu,

with five LGAs in each zone. At the time of the study, there were 477 PHC centres across the state. Each LGA had a PHC director, who was a medical doctor, as well as an apex nurse responsible for coordinating PHC activities.

In Ogun State, there were 1,225 non-physician PHC workers, comprising Nurses (60%), Community Health Officers (CHOs), and Community Health Extension Workers (CHEWs) (40%). All categories of health workers had received at least two years of post-secondary school education.

The Neuropsychiatric Hospital, Aro, Abeokuta, which has specialist multidisciplinary mental health professionals, is the major mental health institution in Ogun State. The hospital provides mental health services to residents of Ogun State, other parts of Nigeria, and neighbouring countries. However, there are no specialist mental health professionals at the primary healthcare level.

In 2011, the Neuropsychiatric Hospital, Aro, entered into a collaborative agreement with the Ogun State Local Government Service Commission to provide mental health services and conduct mental health research at the primary care level [34].

As part of this collaboration, forty (40) PHC centres were selected and designated for the provision of mental health services and mental health research across the four socio-political zones in Ogun State. Specifically, there were ten (10) PHC centres in each socio-political zone, comprising five urban and five rural centres across the Egba, Remo, Yewa, and Ijebu zones.

The Aro community mental health team comprised a project coordinator, consultant psychiatrists, senior registrars in psychiatry, psychiatric nurses, social workers, pharmacists, psychologists, occupational therapists, administrative officers, drivers, and other support staff members.

The study sites comprised 20 PHC centres located within Ogun Central (Egba zone) and Ogun West (Yewa zone). A total of 124 PHC workers, consisting of nurses and CHEWs, were trained using the adapted mhGAP-IG manual on five priority conditions: psychosis, depression, epilepsy, alcohol and substance use disorders, and anxiety disorders/other significant emotional complaints. The training was conducted by the Lead Community Consultant Psychiatrist and other mental health professionals. The training programme had previously been evaluated and found to be effective [34]. Of the 124 PHC workers trained, 72 were from Ogun Central, while 52 were from Ogun West senatorial district.

As part of the training on the depression module, the PHC workers were also trained on the screening of depression using the PHQ-2 and PHQ-9 instruments. In addition, they were trained on the use of the depression module of the mhGAP-IG guidelines for the screening and management of depression.

The study employed a multicentre descriptive follow-up design and was conducted across 20 PHC centres within Ogun Central and Ogun West senatorial districts.

The study population comprised patients who presented to the PHC centres for healthcare services, met the inclusion criteria, and provided informed consent to participate in the study.

Sample size was estimated using Leslie-Kish formula for single Proportion

Using the prevalence rate of depression ranging from 10-20% among primary care clinic attendees in Nigeria [32, 36], then  $P = 0.2$ , and accounting for non-response based on a study on screening for mental disorder at the primary care setting in Lagos, which found the response rate to be 85.1% [38], a minimum sample size of 590 patients was used.

### **Study Instruments**

Patient Health Questionnaire-2 (PHQ-2) (by self-administration)

The PHQ-2 was used to screen for depression in a first-step approach. It is a questionnaire that scores each of the 2 questions from 0 to 3, with a total score ranging from 0 to 6. Scores of 3 and above are considered a positive screen for depression.

The PHQ-2 has good psychometric properties, with a sensitivity of 83%, specificity of 92%, and positive predictive value of 80% for the diagnosis of major depression [35]. It has been used extensively in Nigeria, and the Yoruba-translated version [37] was used in this study for some patients who were not literate. It was used in the Yewa zone, in combination with the mental health Gap Action Programme Intervention Guide (mhGAP-IG).

### **Stage 2 (Making a Diagnosis of Depression)**

The Patient Health Questionnaire-9 (PHQ-9) was used to establish the diagnosis of depression. All patients who had been assessed by the trained PHC workers during Stage 1 and screened positive for depression subsequently underwent further evaluation with the PHQ-9 administered by the field psychiatric nurses.

The PHQ-9 is a brief and clinically useful instrument widely employed in routine clinical practice. It is typically completed by patients within approximately 10 minutes and can be rapidly scored by the researcher or clinician. The instrument serves as a multipurpose tool for the screening, diagnosis, monitoring, and assessment of the severity of depressive symptoms.

The PHQ-9 comprises nine items, each scored on a four-point Likert scale ranging from 0 to 3, similar to the PHQ-2. Total scores range from 0 to 27.

For interpretation of scores:

5 - 9 minimal symptoms

10 - 14 minor depression

15 - 19 moderate depression

>20 severe depression

For the diagnosis of depression, a PHQ-9 score of 10 or above was considered indicative of depression. A PHQ-9

cut-off score of  $\geq 10$  has been shown to have a sensitivity of 88% and specificity of 88% for major depressive disorder [35].

The PHQ-9 has been extensively used in Nigeria, and a validated Yoruba-translated version is available [37]. This translated version was administered to participants who were not literate in the English language.

### **mhGAP-IG Document**

The mental health Gap Action Programme Intervention Guide (mhGAP-IG) is a tool developed by the World Health Organization (WHO) to assist non-specialist healthcare providers, including general practitioners, nurses, and community health workers, in the assessment and management of mental, neurological, and substance use (MNS) disorders, particularly in low- and middle-income countries (LMICs). The document was adapted to suit the local context in Ogun State, Nigeria [34]. The healthcare workers were trained on five priority conditions, including depression. The training covered screening procedures using the guidelines contained in the depression module of the mhGAP-IG, as well as the administration of the PHQ-2 and PHQ-9 instruments. It was utilised in both the Yewa and Egba zones.

### **Sociodemographic Questionnaire**

A structured sociodemographic questionnaire was designed to obtain information on the participants' sociodemographic characteristics. This section elicited information on sex, age, marital status, occupation, educational status, medical comorbidity, duration of untreated mental illness, and types of medical conditions.

### **Sampling Procedure**

The trained PHC workers and field psychiatric nurses participated in the screening of patients across the 20 PHC centres included in the study. At the clinic waiting areas, the study was explained to attendees in both English and Yoruba. Consecutive consenting attendees who met the inclusion criteria were recruited into the study.

### **Ethical approval**

Ethical approval for the study was obtained from the Health Research Ethics Committee of the Federal Neuropsychiatric Hospital, Aro, Abeokuta, Ogun State (HREC/PR/004/19). Permission to conduct the study was also obtained from the Ogun State Local Government Service Commission (LGC.844/44). Written informed consent was obtained from all eligible and consenting participants. Participants were informed that participation was entirely voluntary and that they were free to withdraw from the study at any time without any penalty or loss of benefits.

### **Data Analysis**

The completed proforma was checked for accuracy, serially coded, and entered into the database. Data cleaning and

analysis were conducted using the Statistical Package for the Social Sciences (SPSS) version 21.0. Descriptive statistics, including frequencies, means, standard deviations, and percentages, were used to summarize the data. The Chi-square test was used to assess associations between qualitative variables, while the independent samples t-test was used to compare the means of quantitative variables. A p-value of less than 0.05 was considered statistically significant for all analyses.

**Results**

Out of a total of 590 patients who consented to participate in the study, 493 had fully completed study instruments and were therefore suitable for analysis. This represented 83.6% of the total number of patients screened. Among the 493 participants, 132 patients met the criteria for depression, yielding a prevalence rate of 26.8%.

It is noteworthy that in Ogun West senatorial district (Yewa zone), 229 patients were screened, of whom 79 were diagnosed with depression, representing 34.5% of the screened population. In contrast, in Ogun Central senatorial district (Egba zone), 264 patients were screened, with 53 patients diagnosed with depression, accounting for 20.1% of participants in that district.

The sociodemographic characteristics of all participants are presented in Table 1. Among the 493 participants, 284 (57.6%) were between 20 and 40 years of age, while 169 (34.3%) were aged between 41 and 60 years. The mean age of the participants was 38.6 ± 2.0 years, indicating that the majority were within the economically productive age group. Females constituted 62.3% of the study population, suggesting a higher level of participation among female patients. Regarding educational attainment, 33.7% had primary education, 28.4% had secondary education, 18.5% had post-secondary education, and 9.1% had university education, while 9.9% had no formal education.

With respect to marital status, 60.8% of the participants were married. In addition, 54.5% of the participants were unemployed. Regarding occupational classification, 50.9% of the participants were engaged in unskilled occupations.

Female	307	62.3
<b>Tribe</b>		
Yoruba	418	84.8
Ibo	31	6.3
Hausa	4	0.8
Others	40	8.1
<b>Religion</b>		
Christian	298	60.4
Islam	193	39.2
Others	2	0.4
<b>Education</b>		
No Formal Education	49	9.9
Primary	166	33.7
Secondary	140	28.4
Post-Secondary	91	18.5
University	45	9.1
<b>Marital Status</b>		
Single(Never Married)	99	20.1
Married	300	60.8
Separated /Divorced/Widowed	94	19.1
<b>Employment Status</b>		
Employed	214	43.4
Retired	10	2.0
Unemployed	269	54.6
<b>Occupation Status</b>		
Highly Skilled Professional I	34	6.9
Highly Skilled Professional Ii	52	10.5
Semi-Skilled	128	26.0
Unskilled	251	50.9
Others	28	5.7

**Table 1:** Socio-Demographic Variables of Patients Screened for Depression

Variable	Frequency (N=493)	Percent-ages (%)
Age Mean(SD)	38.6(2.0)	
Age groups		
<20 Years	5	1.0
20 -40years	284	57.6
41-60 Years	169	34.3
>60years	35	7.1
<b>Sex</b>		
Male	186	37.7

Table 2a presents the findings on the screening of patients for depression across the two study zones using the PHQ-2 screening instrument. The total PHQ-2 score ranges from 0 to 6, with scores of 3 or above considered positive for depression screening.

In the Yewa zone, a total of 229 patients were screened, of whom 88 (38.4%) screened positive for depression. The PHQ-9 was subsequently administered to these 88 patients, and 79 participants had scores of 10 or above. Initial screening in the Yewa zone was conducted using both the PHQ-2 and the depression module of the mhGAP-IG guidelines. Consequently, 79 (34.5%) of the 229 patients were confirmed

to have depression.

In the Egba zone, 264 patients were screened using only the mhGAP-IG depression module, of whom 60 (22.7%) screened positive for depression. The PHQ-9 was subsequently administered to these patients, and 53 had scores of 10 or above. Consequently, 53 (20.1%) of the 264 patients

screened in the Egba zone were confirmed to have depression.

Overall, a total of 132 (26.8%) participants from both zones met the criteria for a diagnosis of depression among the 493 patients who participated in the study.

YEWA ZONE (n=229)	EGBA ZONE (n=264)
PHQ-2 + mhGAP = 88	mhGAP = 60
Number positive = 88(38.4%)	Number positive =60(22.7%)
PHQ-9 ≥ 10 = 79 (34.5%) (Confirmed Cases)	PHQ-9 ≥10 =53(20.1%) (Confirmed Cases)
Total For Both Zones= 132(26.8%)	

**Table 2a:** Screening of patients and confirmation of Depression with PHQ-9

Table 2b shows that there was a significant difference in the detection rate of depression among trained PHC workers who routinely applied PHQ-2 (Yewa zone) for screening compared to the Egba zone that did not apply PHQ-2 on the patients. There was higher detection of depression at

the Yewa zone (34.5%) compared the Egba zone (20.1%). There was a significant difference in the mean score of depression for the Yewa zone (19.8) (4.9) that used PHQ-2 + mhGAP-IG compared with the Egba zone (14.5) (3.8) that used only mhGAP documents (p=0.001).

	P-value	Positive n (%)	PHQ- Scores > 10 (n) (%)	Mean (SD)	Independent T Test	P-value
<b>Zones</b>						
Yewa (n=229)	(PHQ-2 + mhGAP)	88 (34.8)	79 (34.5)	19.8 (4.9)	24.71	0.001
Egba (n=264)	(mhGAP)	60 (22.7)	53(20.1)	14.5 (3.8)		

**Table 2b:** Influence of combined PHQ-2 and mhGAP-IG on Depression Screening

The results presented in Table 3 summarise the sociodemographic characteristics of participants diagnosed with depression. The findings showed that 34.8% of the patients were males, while 65.2% were females. Regarding educational attainment, 29.0% had primary education, 26.7% had secondary education, and 13.0% had university education, while 13.0% had no formal education.

With respect to marital status, 46.2% of the participants were married, whereas 34.6% were single. In terms of employment status, 54.3% were employed, while 44.1% were unemployed. Additionally, 43.2% of the participants were engaged in unskilled occupations. Slightly over 10% of the participants reported having comorbid physical health conditions, including hypertension, diabetes mellitus, and peptic ulcer disease.

Variables	Frequency (n=132)	Percentages (%)
Age Mean (SD)	41.3(13.70)	
<b>Age Groups</b>		
18-30	35	26.5
31-45	52	39.4

46-60	29	22.0
61+	16	12.1
<b>Sex</b>		
Male	50	37.9
Female	82	62.1
<b>Tribe</b>		
Yoruba	101	76.5
Ibo	13	9.8
Hausa	5	3.8
Others	13	9.8
<b>Religion</b>		
Christian	78	59.1
Islam	53	40.2
Others	1	0.8
<b>Education</b>		
No Formal Education	17	12.9
Primary	38	28.8
Secondary	35	26.5

Post-Secondary	24	18.2
University	17	12.9
<b>Marital Status</b>		
Single(Never Married)	45	34.1
Married	60	45.5
Separated/Divorced/Widowed	25	18.9
<b>Employment Status</b>		
Employed	69	52.3
Retired	2	.1.5
Unemployed	56	42.4
<b>Occupation Status</b>		
Highly Skilled Professional I	4	3.0
Highly Skilled Professional II	13	9.8
Semi-Skilled	31	23.5
Unskilled	57	43.2
Others	27	20.5
Physical comorbid conditions	16	12.1

**Table 3:** Demographic Characteristics of Patients Diagnosed with Depression

## Discussion

In this study, the prevalence of depression obtained among patients attending primary healthcare settings in Ogun State was 26.8%. Previous studies on psychiatric morbidity at the primary care level have reported prevalence rates ranging from 21.3% to 63.1%, with depression consistently identified as the most common psychiatric condition encountered in these settings [32,38].

Studies conducted in primary care settings in Western countries have reported prevalence rates for depression ranging from 15.3% to 22% [30]. Similarly, studies conducted in primary care settings in Nigeria have shown that depression occurs in approximately 10–20% of patients attending clinics [31,32].

Among the 132 patients diagnosed with depression in the present study, the majority (50.8%) had mild depressive disorder. Although the prevalence obtained in this study is higher than the 20% reported by Gureje et al. [31], it is lower than the 48.7% reported by Obadeji et al. [37] in a study conducted in a primary healthcare facility in Ekiti State, Nigeria. Variations in the prevalence of depression reported across studies may be attributable to differences in study settings, methods of case ascertainment, and the sensitivity and specificity of the screening and diagnostic instruments employed. Among participants diagnosed with depression, the prevalence was approximately twice as high among females compared with males. This finding is consistent with the established epidemiology of depressive disorders [39].

More than half of the participants diagnosed with depression had secondary school education or lower educational attainment, while 34.6% were single, and nearly half were unemployed. These sociodemographic characteristics are similar to those reported in previous studies conducted in comparable settings [31,34,36,37].

Although attrition is often unavoidable in follow-up epidemiological studies, psychiatric research is particularly vulnerable to the effects of attrition, which may affect the validity and generalizability of findings [38].

One of the limitations of this study was the inability to control for factors such as physical comorbidities, which may have influenced the outcomes of the interventions. In addition, certain cultural, social, and economic factors that could potentially affect screening outcomes across the different senatorial districts were not controlled for. Future studies should seek to address these potential confounding variables.

## Conclusion

This study has demonstrated the feasibility of improving the detection of depression in primary healthcare settings through the training of non-physician primary healthcare workers to use simple, easy-to-administer screening tools. Strategies aimed at improving the recognition and early intervention for depression, such as mental health training focused on depressive disorders and routine screening using the PHQ-2, PHQ-9, and mhGAP-IG tools, should be incorporated into routine service delivery at the primary healthcare level, as these measures are likely to improve the quality of mental health services for depression.

**Conflict of Interest:** None declared.

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