

Assessment of Depression in a Primary Care Setting in Nigeria using the PHQ-9

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ABSTRACT

Context: Mental disorders are major contributors to the burden of diseases all over the world. In general practice, which provides essentially primary care, depression is the most common mental disorder seen and often goes unrecognized. **Aims:** The aims of the study were to determine the prevalence of depression, the variables associated with depression, and the degree of recognition by the Physician in family medicine unit. **Setting and Design:** A cross-sectional descriptive survey of consecutive patients who presented at the general medical out-patient unit of the State University Teaching Hospital, Ado-Ekiti, Nigeria was done. **Materials and Methods:** Data were collected using a questionnaire incorporating sociodemographic variables and primary diagnosis made by attending Physician. Depression was assessed with the PHQ-9. **Results:** Two hundred and seventy two patients were interviewed during the period of the study. Participants were mostly of 45 years or older (51.2%), female (59.9%), married (68.4%), and educated (85.7%). One hundred and thirty (47.8%) of the respondents had significant depressive symptoms with majority (49.2%) being classified as mild. Statistical analysis revealed significant association between depression and age, gender, marital status, and clinical diagnoses ($P < 0.05$). Over a quarter (28.7%) were presented with infectious diseases, other diagnoses made included cardiovascular disorders (15.8%), endocrine disorders (8.8%), psychiatric disorders other than depression (2.9%) and none had depression as primary diagnosis. **Conclusions:** The prevalence of depression among patients attending the general medical out-patient clinics is high and highly under-recognised.

Keywords: Assessment, depression, general medical practice, primary care, recognition

Introduction

Depression is an important public health problem in which General Practitioners (GPs) play a significant role.^[1] Among patients attending general medical out-patient, rate between 11.4% and 59.6% have been reported, with most presenting in the mild form.^[2,3] Although depression is mild in most cases, the proportion of depressed patients with significant disability was 3-fold with that of among patients without depression.^[4] Studies have consistently reported the association of depression with sociodemographic variables.^[2,5,6]

In primary care setting, depression is the second most common chronic disorder seen; however, most patients with depression go unrecognised.^[7] Recognising depression in general medical out-patient may be particularly challenging because patients

with depression who presents to general duty physician often described somatic symptoms.^[8] Somatic manifestations of depression however occur across all cultures, and contribute significantly to the under-recognition of depression in primary care practice.^[9]

This study was aimed at determining the prevalence, pattern, and degree of recognition of depression among patient attending the general medical out-patient clinic of the State University Teaching Hospital.

Materials and Methods

Setting and design

The study is a cross-sectional survey including all the newly registered patients attending the general medical out-patient of the State University Teaching Hospital. The hospital provides primary, secondary, and tertiary levels of care for people of all ages within the State and the environs. The general out-patient

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clinic provides essentially primary care services to people aged 16 years and above.

All newly registered patients who attended the clinic during the period were included in the study. Those who came for routine medical check-up, those with debilitating physical illness, bereavement, and those who refused to give consent were excluded from the study.

Data were collected using a pretested, semistructured questionnaire incorporating sociodemographics, key symptoms, and the diagnoses made by the attending Physician. The primary clinical diagnoses made by the attending physicians were classified into (i) Infectious diseases such as malaria, typhoid, and others not specific to any system, (ii) cardiovascular disorders; essentially hypertension, (iii) respiratory disorders, (iv) gastrointestinal disorders, (v) genitor-urinary disorders, (vi) musculo-skeletal disorders, (vii) endocrine disorders; essentially diabetes, (viii) and (ix) others (including dermatological disorders, ear, eye, neurological, and other nonspecific diagnoses). The PHQ 9 was also completed by all consenting individuals. The PHQ-9 consists of nine items, each of which is scored 0 to 3, providing a 0 to 27 severity score. PHQ-9 severity is calculated by assigning scores of 0, 1, 2, and 3, to the response categories of: Not at all, several days, more than half the days, and nearly every day, respectively. PHQ-9 total score for the nine items ranged from 0 to 27.^[10] It consists of the nine criteria for depression from the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV). The PHQ-9 is comparable or superior in operating characteristics, and valid as both a diagnostic and severity measure.^[11] Scores of 5, 10, 15, and 20 represent cut points for mild, moderate, moderately severe, and severe depression, respectively. Sensitivity to change has also been confirmed. The study instruments were given to all consenting individuals.

Ethics

Ethical clearance was obtained from the hospital's research and ethical committee. Informed written consent was also obtained from each subject. Confidentiality was ensured by not indicating the names of the subjects on the questionnaire and only the investigators had access to the data. Subjects were adequately counselled before the administration of the instruments.

Statistical analysis

Data were analyzed using the SPSS version 15.0 statistical package for windows. Mean and standard deviation were used to describe continuous variables and proportion for categorical data. The comparison of group means was done using student *t*-test, while the significance of observed difference in qualitative variables was determined by Chi-square (χ^2) tests with Yates' correction applied where applicable. A $P < 0.05$ was considered statistically significant.

Results

A total of 272 patients were interviewed during the study. The age range of the participants was from 18 to 90 with a mean age of 45.27 standard deviation (SD = 16.38). The mean age for males was 46.23 (SD = 16.03) while for female was 44.63 (SD = 16.63). There was no significant difference in the mean age of both sexes ($t = 0.788$, $df = 270$, $P = 0.432$). The mean PHQ score for males was 4.92 (SD = 4.503) while that of female was 6.80. There was a statistical significant difference in the mean PHQ scores for both sexes ($t = -3.004$, $df = 270$, $P = 0.003$). Among those assessed, 47.8% had significant depressive symptoms; with 49.2% classified as mild, 35.4% as moderate, 10.8% as moderately severe, and 4.6% as severe.

As shown in Table 1, most of the participants were females (59.9%), 45 years and above (51.2%), employed (68.8%), married (68.4%), and had schooling beyond primary school. Majority (62.5%) earn income of less than \$100 per month.

Table 2 shows the diagnostic grouping of the diagnoses made by the attending Physician. Infectious diseases ranked highest accounting for 28.7%, followed by cardiovascular disorders (15.8%), musculoskeletal disorders (11.0%), endocrine disorders (8.8%), gynecological/genito-urinary disorders and others as shown in the table.

Table 1: Sociodemographic characteristics of the subjects

Characteristics	Frequency (%)
Age group	
≤45	131 (48.2)
>45	141 (51.8)
Sex	
Male	109 (40.1)
Female	163 (59.9)
Marital status	
Single	65 (23.8)
Married	186 (68.4)
Separated	1 (0.4)
Divorced	1 (0.4)
Widowed	19 (7.0)
Employment status	
Employed	187 (68.8)
Unemployed	85 (31.2)
Educational attainment	
No formal education	39 (14.3)
Primary education	51 (18.8)
Secondary education	55 (20.2)
Tertiary education	127 (46.7)
Income per month (dollars)	
≤100	170 (62.5)
>100-200	35 (12.9)
>200-300	25 (9.2)
>300	42 (15.4)
Religion	
Christianity	242 (89.0)
Islam	30 (11.0)

The relationship between sociodemographic characteristics and depression is as shown in Table 3. Depression was significantly more common in patients aged 45 years and above ($\chi^2 = 7.956, P = 0.005$). It was also significantly associated with gender ($\chi^2 = 4.021, P = 0.045$) and marital status ($\chi^2 = 17.117, P < 0.005$). However, there was no significant association between level of income, employment, and status educational attainment.

Table 4 shows primary clinical diagnostic grouping and depression. Depression was found to be statistically significant associated with clinical diagnostic grouping ($\chi^2 = 20.607, P = 0.008$). Majority (76.2%) of those with respiratory tract disorders and 75.0% of those presenting with psychiatric diagnosis other than depression were found to be depressed.

Discussion

Depression is not only the most common mental disorder in general practice, but also in mental health settings. Among the population of general medical out-patients studied, about half had significant depressive symptoms majority of which presented as mild. Hence, this study also confirmed the high prevalence of depression among general medical out-patients. The prevalence rate of 47.7% reported in this study is similar to 49% reported by Ohaeri and Jegede in Ibadan^[12] and lower when compared with 59.9% reported by Afolabi *et al.*^[2] in similar settings. This difference may have been due to methodological approaches, specificity, and the sensitivity of the instruments used. The prevalence reported in this study is however higher, when compared with that reported among specific medical out-patient clinics such as internal medical out-patient,^[6,13] HIV out-patients,^[14] or cancer clinics.^[15] Ideally one would have expected that people with chronic medical conditions would have had a higher rate of depression compared to those attending general medical out-patients, which comprise of varieties of patients. The variations observed may have been due to the fact that majority of the subjects in this study presented with milder form of depression and which possibly may not be picked up by more specific instruments like the diagnostic instruments used in those studies.

Despite the high rate of depressive symptoms in this study, none of the respondents had depression as their primary diagnosis by the attending physician. This also confirmed the underrecognition of depression among patients attending primary-care settings.^[16,17] Underrecognition of depression has been recognized as a critical health problem with high societal cost-related disability,^[18,19] morbidity, poor adherence to medication, and excessive health care utilization.^[20,21] Failure to recognize depression means the agony and the suffering continue, with repeated utilization of health services. There are several factors affecting the doctors' ability to recognize depression. These vary from clinician characteristics such as training background, year of practice, and the setting including the busy nature of general medical out-patient (particularly

Table 2: Pattern of clinical diagnoses

Clinical diagnoses	Frequencies (%)
Infectious diseases	78 (28.7)
Cardiovascular disorders	43 (15.8)
Endocrine disorders	24 (8.8)
Respiratory disorders	20 (7.4)
Gastro-intestinal disorders	22 (8.1)
Musculo-skeletal disorders	30 (11.0)
Gynaecological/genito-urinary disorders	24 (8.8)
Psychiatric disorders other than depression	8 (2.9)
Others*	23 (8.5)
Depression	0

*Others include seizures, dermatological disorders, eyes and ears diseases

Table 3: Sociodemographic characteristics and depression

Subjects characteristics	Depressed subjects n (%)	Nondepressed subjects n (%)	Statistics
Age group			
<45	51 (38.9)	80 (61.1)	$\chi^2=7.956,$ $P=0.005$
≥45	79 (56.0)	62 (44.0)	
Sex			
Male	44 (40.4)	65 (59.6)	$\chi^2=4.021,$ $P=0.045$
Female	86 (52.8)	77 (47.2)	
Marital status			
Single	25 (40.3)	37 (59.7)	$\chi^2=17.117,$ $P=0.000$
Married	86 (45.5)	105 (54.5)	
Divorced/separated/widowed	19 (90.5)	2 (9.5)	
Employment status			
Employed	90 (48.1)	97 (51.9)	$\chi^2=0.027,$ $P=0.870$
Unemployed	40 (47.1)	45 (52.9)	
Educational attainment			
No formal education	20 (51.3)	19 (48.7)	$\chi^2=3.923,$ $P=0.270$
Primary education	29 (56.9)	22 (43.1)	
Secondary education	21 (38.2)	34 (61.8)	
Tertiary education	60 (47.7)	67 (52.3)	
Income per month (dollars)			
≤100	86 (50.6)	84 (49.4)	$\chi^2=3.871,$ $P=0.276$
>100-200	13 (37.1)	22 (62.9)	
>200-300	9 (36.0)	16 (64.0)	
>300	22 (52.4)	20 (47.6)	

Table 4: Depression and clinical diagnoses

Clinical diagnoses	Depressed (%)	Nondepressed (%)	Statistics
Infectious diseases	37 (47.4)	41 (52.6)	$\chi^2=20.607,$ $P=0.008$
Cardiovascular diseases	23 (52.3)	21 (47.7)	
Endocrine disorders	12 (50.0)	12 (50.0)	
Gynecological/Genito-urinary tract	10 (40.0)	15 (60.0)	
Gastro-intestinal tract disorders	6 (28.6)	15 (71.4)	
Respiratory tract disorders	15 (75.0)	5 (25.0)	
Musculoskeletal disorders	16 (53.3)	14 (46.7)	
Psychiatric diagnoses other than depression	6 (75.0)	2 (25.0)	
Others	4 (19.0)	17 (81.0)	

in this environment), patient characteristics, and symptom presentations.^[9,22-24] Invariably, inability to diagnose depression denies patients of access to right medication, thereby prolonging the burden of the disease with attendant morbidity and mortality. Therefore, early detection and treatment of depression, which in most cases is the responsibility of primary care Physician is essential. The poor recognition of depression may also be understood on the ground that some chronic medical illnesses and psychiatric disorders may produce similar somatic symptoms.^[25] Recognizing depression in patients in the general medical out-patient clinics which essentially provides primary care services may be particularly challenging because patients with depression who present to primary care physician often describe somatic symptoms rather than psychological symptoms.^[9] Conversely, almost 60% of psychiatric patients have identifiable physical illnesses.^[26] In this study, only 2.9% of the population studied had psychiatric diagnoses other than depression, and of this 75% were identified by PHQ-9 as having significant depressive symptoms.

This study found significant association of depression with some sociodemographic variables. Depression was more common in the age group of 45 years and above and this was statistically significant ($P < 0.005$). This also substantiates the findings of some other authors.^[27,28] Afolabi *et al.* in a similar setting found higher prevalence of depression among people aged 45 and above. The higher prevalence of medical morbidity, chronic medical illness, loss of spouse, unemployment, and other social issues may invariably explain this. Besides age, our study also found a significant association between gender and depression. Similar findings have been reported by other authors in literatures.^[13,29] Gender was also found to correlate with PHQ-9 scores. Females on the average had a higher PHQ scores than men and this was significant ($P < 0.005$). Women across cultures and around the world have an increased chance of suffering from depression compared to men.^[30] The gender-specific role places a demand on females and limited other roles for women; for example, women are less likely to be employed and with increased stress if employed.^[29] The possibility of childhood sexual abuse also increases the likelihood of depression in women.^[31]

This study also found a significant association between marital status and depression. Most of our subjects, who are divorced, separated or widowed were more likely to be depressed compared with those that were either single or married. This observation was similar to that reported by other authors,^[5,27] but however contrary to the findings of Brown *et al.*^[32] Contrary to findings by some authors, our study did not find a statistical significant association between depression and employment status, educational attainments, and average income per month.^[2,29,33-35]

In this study, the relationship between depression and clinical diagnosis made by the attending clinician was found to be significant. About three quarter of patients presenting with

respiratory tracts disorders were depressed. However, the reason for this observation is quite unclear. There is need for further research to validate this association. Similarly, 75% of those presenting with other psychiatric diagnoses asides depression were identified as having significant depressive symptoms. There is a high possibility that some of these would have been diagnosed as depressed rather than other psychiatric diagnosis such as anxiety disorders, somatization disorder, and other similar diagnoses that were made by attending physicians. The fact that most patients with depression present majorly with somatic symptoms in this environment may have accounted for this possible misdiagnosis. The other possibility is the fact that depression often comorbid with other psychiatric diagnoses.^[36]

Conclusion

There is high prevalence of depressive symptoms among patients attending the general medical outpatient clinics and this largely goes undiagnosed and therefore, unmanaged. This is largely associated with some sociodemographic variables and primary diagnoses. Patient with diagnosis of other psychiatric disorder besides depression, those with respiratory tract disorders, hypertension, and those presenting with features of endocrine disorders (diabetes) should be closely evaluated for depression. These findings also call further training of general duty Physicians/ Family Physician in the recognition of features of depression.

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References

- Berardi D, Leggieri G, BertiCeroni G, Rucci P, Pezzoli A, Paltrinieri E, *et al.* Depression in primary care. A nationwide epidemiological survey. *Fam Pract* 2002;19:397-400.
- Afolabi MO, Abioye-Kuteyi EA, Fatoye FO, Bello IS, Adewuya AO. Pattern of depression among patients in a Nigeria Family practice population. *SA Fam Pract* 2008;50:63-8.
- Baiyewu O, Smith-Gamble V, Lane KA, Gureje O, Gao S, Ogunniyi A, *et al.* Prevalence estimates of depression in elderly community-dwelling African Americans in Indianapolis and Yoruba in Ibadan, Nigeria. *Int Psychogeriatr* 2007;19:679-89.
- Hays RD, Wells KB, Sherbourne CD, Rogers W, Spritzer K. Functioning and well-being outcomes of patients with depression compared with chronic general medical illnesses. *Arch Gen Psychiatry* 1995;52:11-9.
- Amoran O, Lawoyin T, Lasebikan V. Prevalence of depression among adults in Oyo State, Nigeria: A comparative study of rural and urban communities. *AustJ Rural Health* 2007;15:211-5.
- Qin X, Wang W, JinQ, Ai L, Li Y, Dong G, *et al.* Prevalence and rates of recognition of depressive disorders in internal medicine outpatient departments of 23 general hospital in Shenyang, China. *J Affect Disord* 2008;110:46-54.

7. Sharp LK, Lipsky MS. Screening for depression across the lifespan: A review of measures for use in primary care settings. *Am Fam Physician* 2002;66:1001-8.
8. Suh T, Gallo JJ. Symptom profiles of depression among general medical service users compared with specialty mental health service users. *Psychol Med* 1997;27:1051-63.
9. Okulate GT, Olayinka MO, Jones OB. Somatic symptoms in depression: Evaluation of their diagnostic weight in an African setting. *Br J Psychiatry* 2004;184:422-7.
10. Cameron IM, Craford JR, Lawton K, Reid IC. Psychometric comparison of PHQ-9 and HADS for measuring depression severity in primary care. *Br J Gen Pract* 2008;58:32-6.
11. Löwe B, Kroenke K, Herzog W, Gräfe K. Measuring depression outcome with a brief self-report instrument: Sensitivity to change of the patient health questionnaire (PHQ-9). *J Affect Disord* 2004;81:61-6.
12. Ohaeri JU, Jegede RO. Depression and the general medical practitioner in Nigeria. *Medicare* 1991;6:7-11.
13. Adewuya AO, Ola BA, Ajayi OE, Oyedemi AO, Balogun MO, Mosaku SK. Prevalence and correlates of major depressive disorder in Nigerian outpatients with heart failure. *Psychosomatics* 2006;47:479-85.
14. Obadeji A, Ogunlesi AO, Adebawale TO. Prevalence and predictors of depression in people living with HIV/AIDS attending an outpatient clinic in Nigeria. *Iran J Psychiatry Behav Sci* 2014;8:26-31.
15. Nuhu FT, Odejide AO, Adebayo KO, Adejumo O. Prevalence and predictor of depression in cancer patients in the University Teaching Hospital, Ibadan, Nigeria. *Hong Kong J Psychiatry* 2008;18:107-14.
16. Borus JF, Howes MJ, Devins NP, Rosenberg R, Livingston WW. Primary health care providers' recognition and diagnosis of mental disorders in their patients. *Gen Hosp Psychiatry* 1988;10:317-21.
17. Ndeti DM, Khasakhala LI, Kuria MW, Mutiso VN, Ongecha-Owuor FA, Kokonya DA. The prevalence of mental disorders in adults in different level general medical facilities in Kenya: A cross-sectional study. *Ann Gen Psychiatry* 2009;8:1.
18. Baik SY, Bowers BJ, Oakley LD, Susman JL. The recognition of depression: The primary care clinician's perspective. *Ann Fam Med* 2005;3:31-7.
19. Ustün B. The global burden of mental disorders. *Am J Public Health* 1999;89:1315-8.
20. Johnson J, Weissman MM, Klerman GL. Service utilization and social morbidity associated with depressive symptoms in the community. *JAMA* 1992;267:1478-83.
21. DiMatteo WR, Lepper HS, Croghan TW. Depression is a risk factor for noncompliance with medical treatment: Meta-analysis of the effects of anxiety and depression on patient adherence. *Arch Intern Med* 2000;160:2101-7.
22. Gerber PD, Barrett J, Manheimer E, Whiting R, Smith R. Recognition of depression by internists in primary care: A comparison of internist and "gold standard" psychiatric assessments. *J Gen Intern Med* 1989;4:7-13.
23. Cooper-Patrick L, Crum RM, Ford DE. Characteristics of patients with major depression who received care in general medical and specialty mental health settings. *Med Care* 1994;32:15-24.
24. Bridges KW, Goldberg DP. Somatic presentation of DSM-III psychiatric disorders in primary care. *J Psychosom Res* 1985;29:563-9.
25. Drayer RA, Mulsant BH, Lenze EJ, Rollman BL, Dew MA, Kelleher K, *et al.* Somatic symptoms of depression in elderly patients with medical comorbidities. *Int J Geriatr Psychiatry* 2005;20:973-82.
26. Granville-Grossman KL. Mind and body. In: Lader MH, editor. *Handbook of Psychiatry*. Cambridge, UK: Cambridge University Press; 1983. p. 5-13.
27. Gómez-Restrepo C, Bohórquez A, Pinto Masis D, Gil Laverde JF, Rondón Sepúlveda M, Díaz-Granados N. The prevalence of and factors associated with depression in Colombia. *Rev Panam Salud Publica* 2004;16:378-86.
28. Kebede D, Alem A, Deyassa N, Shibre T, Negash A, Beyero T. Socio-demographic correlates of depressive disorder in Butajira, rural Ethiopia. *Cent Afr J Med* 2003;49:78-83.
29. Rapmund V, Moore C. Women's stories of depression: A constructivist approach. *S Afr J Psychol* 2000;30:20.
30. Ngcobo M, Pillay BJ. Depression in African women presenting for psychological services at a general hospital. *Afr J Psychiatry (Johannesbg)* 2008;11:133-7.
31. Weiss EL, Longhurst JG, Mazure CM. Childhood sexual abuse as a risk factor for depression in women: Psychological and neurobiological correlates. *Am J Psychiatry* 1999;156:816-28.
32. Brown AC, Brody GH, Stoneman Z. Rural black women and depression: A contextual analysis. *J Marr Fam* 2000;62:187-98.
33. Comino EJ, Harris E, Silove D, Manicavasagar V, Harris MF. Prevalence, detection and management of anxiety and depressive symptoms in unemployed patients attending general practitioners. *Aust N Z J Psychiatry* 2000;34:107-13.
34. Shiels C, Gabbay M, Dowrick C, Hulbert C. Depression in men attending a rural general practice: Factors associated with prevalence of depressive symptoms and diagnosis. *Br J Psychiatry* 2004;185:239-44.
35. Kahn RS, Wise PH, Kennedy BP, Kawachi I. State income inequality, household income, and maternal mental and physical health: Cross-sectional national survey. *BMJ* 2000;321:1311-5.
36. Freeman CP, Joska JA. Dealing with major depression in general practice. *S Afr Fam Pract* 2012;54:203-9.

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