

## Depression among Visually Impaired Adults in Ibadan

Bitto Sewuese<sup>1\*</sup>, Gureje Oye<sup>2</sup>, Bekibele Charles<sup>3</sup> and Bitto Terkaa<sup>4</sup>

<sup>1</sup>Department of Ophthalmology, Garki Hospital Abuja, Abuja, FCT, Nigeria

<sup>2</sup>Professor and Consultant Psychiatrist, Department of Psychiatry, University College Hospital, Ibadan, Oyo State, Nigeria

<sup>3</sup>Professor and Consultant Ophthalmologist, Department of Ophthalmology, University College Hospital, Ibadan, Oyo State, Nigeria

<sup>4</sup>Department of Public Health, Benue State University Teaching Hospital, Makurdi, Benue State, Nigeria

\*Corresponding Author: Bitto Sewuese, Department of Ophthalmology, Garki Hospital Abuja, Abuja, FCT, Nigeria.

Received: March 17, 2019; Published: June 19, 2019

### Abstract

**Background:** Visual impairment is associated with depression globally; however, there is paucity of such information in an African setting. Depression in the visually impaired is associated with difficulty in carrying out activities of daily living thus affecting negatively quality of life.

**Objectives:** To determine the prevalence of depression and the relationship between visual impairment and depression among adult patients attending the Eye Clinic, University College Hospital, Ibadan, Oyo State, Nigeria.

**Methodology:** An observational non-intervention study of 450 adult patients with visual impairment visiting the Eye Clinic for the first time. All participants had visual acuity assessment, ocular examination and were all screened for depression using the Beck's Depression Inventory 2nd edition (BDI-II).

**Results:** The mean age of participants was  $51.16 \pm 18.48$  years with a M:F of 0.8:1. The prevalence of depression among visually impaired adults was 27.1%. Respondents who had visual impairment for  $\geq 1$  year were almost 18 times more likely to screen positive to depression than those who had  $< 1$  year of visual impairment (OR, 17.64; 95% CI, 7.0 - 44.3). Compared with persons with mild visual impairment, those with severe visual impairment were 235 times more likely to be depressed (OR, 235.53; 95% CI, 66.8 - 829.7). Multivariate logistic regression revealed that duration of visual impairment was the strongest predictor (AOR, 10.05; 95% CI, 3.4 - 29.7) of depression.

**Conclusion:** Depression is common and underdiagnosed among visually impaired patients attending the Eye Clinic, University College Hospital, Ibadan. The results indicate the need to screen visual impaired subjects for depression and refer for treatment.

**Keywords:** Visual Impairment; Depression; Vision; Visual; Visual Acuity

### Introduction

Visual impairment refers to the functional loss which results from a visual disorder. It is defined in the International Statistical Classification of Diseases and related Health problems, Tenth Revision (ICD-10) as the presenting visual acuity in the better eye of  $< 20/30 - 20/400$  ( $< 6/9 - 3/60$ ) [1,2]. It is categorized into mild, moderate and severe visual impairment. Depression is a common mental disorder that presents with depressed mood or a loss of interest or pleasure in daily activities for more than two weeks. Mood represents a change from the person's baseline with impaired function affecting either social, occupational or educational activities. Specific symptoms include, depressed mood, decreased interest, weight changes, changes in sleep, change in activity, fatigue or loss of energy, guilt or worthlessness, diminished concentration and suicidality [3]. These problems can become chronic or recurrent and lead to substantial impairments

in an individuals' ability to take care of his or her everyday responsibilities. At its worst, depression can lead to suicide, a tragic fatality associated with the loss of about 850,000 lives worldwide every year [4].

Depression is currently the second leading cause of disability adjusted live years in the age category 15 - 44 years for both sexes combined [4]. It is projected that by the year 2020, depression will be the second most burdensome condition for all ages and in both sexes [4]. Depression occurs in persons of both genders, and of all ages and backgrounds.

It has been shown that visual impairment is a strong predictor of emotional distress and is associated with depression [5]. Results from population and hospital-based studies indicate that visual impairment is associated with higher rates of depression [5-9,11-19]. Evans., *et al.* [6] found that visually impaired people had a 25% increased odds of depression. Carabellese., *et al.* [7] found that visual impairment was associated with an increased risk for depression in a large study of community-dwelling adults (Odds ratio for depression associated with visual impairment, 2.3; 95% Confidence Interval (CI), 1.5 - 3.4). Rovner and Ganguli [8] identified an even stronger association (Odds ratio, 4.6; 95% CI, 2.2 - 9.6). Prevalence rates for depression among visually impaired older people range from 25 - 45% compared to < 20% among those with normal vision [6].

The impact of depression in the visually impaired population is extremely debilitating and has been associated with increased difficulty in carrying out activities of daily living, mobility and socializing. Visually impaired people with depression are also less likely to use vision rehabilitation services than those without depression [9].

Despite the prevalence and impact of depression in people with visual impairment, there has been little focus on the detection and management of depression in visually impaired patients especially in an African environment. This study aimed to determine the prevalence of depression and the relationship between visual impairment and depression among adult patients attending the Eye Clinic of the University College Hospital, Ibadan with the intention of making recommendations for improved management of depression amongst visually impaired patients.

## Methodology

This observational non-intervention hospital study was performed between January and March 2013 at the Eye Clinic of the University College Hospital, Ibadan, Oyo State, Nigeria. Ethical approval and clearance was obtained from the joint Ethical Committee of the University of Ibadan/University College Hospital, Ibadan and written informed consent was obtained from each participant, who also consented to the possible publication of this article. Four hundred and fifty participants were recruited. The sample size was calculated using the Leslie-Kish formula ( $n = Z_{\alpha}^2 pq/d^2$ ) [10]. Inclusion criteria were adults (16 years and older), visual impairment for at least 2 weeks and attending the Eye Clinic for the first time. All participants had visual acuity assessment and ocular examination done. Visual impairment was defined as presenting visual acuity of < 6/9-3/60 in the better eye. They were all screened for depression using the Beck's Depression Inventory 2<sup>nd</sup> edition (BDI-II). The Beck Depression Inventory 2<sup>nd</sup> edition (BDI-II) [20] is the most widely used self-report measure of depression comprising 21 questions assessing cognitive, behavioural, affective and somatic components of depression. Both internal consistency reliability and test-retest reliability have been demonstrated [21-25]. Sensitivity and specificity are jointly maximized when depression is predicted at the score of 18 and above in Nigeria [21]. It has been validated for use in Nigeria [21].

The BDI-II questionnaire was self-administered by the participant who selected the statement that seemed to fit them the best. However, in cases where the respondent could not read English or Yoruba the investigator read out the items to them. The total score was then determined by addition of the numerical value of each statement. A total score of 18 and above was suggestive of depression.

## Statistical analysis

Data was analyzed using the Statistical Package for Social Sciences version 15. Bivariate and multivariate analyses were conducted with a p value of < 0.05 considered significant.

## Results

A total of 450 patients participated in this study. The mean age of participants was  $51.16 \pm 18.48$  years. There were 208 (46.2%) males and 242 (53.8%) females. Of all the respondents, 168 (37.3%), 190 (42.2%) and 92 (20.4%) had mild, moderate and severe visual impairment respectively in the worse eye.

Using the Beck's Depression Inventory (BDI - II), the proportion of respondents who had depression was 122/450 giving a prevalence of 27.1%.

There was a statistically significant association between the grade of visual impairment and depression (p value = <0.001), with the proportion of depressed respondents increasing as the severity of visual impairment increased. This is shown in table 1.

Grade of visual impairment	Depression Yes Frq (%)	Depression No Frq (%)	Total	Chi square	P value
Mild (<6/9-6/18)	5 (4.1)	163 (49.7)	168 (37.3)	175.13	< 0.001
Moderate (<6/18-6/60)	47 (38.5)	143 (43.6)	190 (42.2)		
Severe (<6/60-3/60)	70 (57.4)	22 (6.7)	92 (20.5)		

Table 1: Association between grade of visual impairment and depression.

Duration of visual impairment was significantly associated with depression (p value = < 0.001), see table 2.

Duration of visual impairment	Depression Frq (%)	No Depression Frq (%)	Total	Chi square	P value
< 1 year	6 (4.9)	141 (43)	147 (32.5)	53.515	< 0.001
≥ 1 year	116 (95.1)	187 (57)	303 (67.5)		

Table 2: Association between duration of visual impairment and depression.

Performing binary logistic regression to determine extent of association revealed that older age (≥ 50 years), unemployment, marital status (divorced or widowed), increasing severity of visual impairment, longer duration of visual impairment (≥ 1 year), and a history of hypertension or diabetes mellitus were significantly associated with depression. Respondents who were aged ≥ 50 years were five times more likely to be depressed than those < 50 years (OR, 5.49; 95% CI, 3.2 - 9.2). Respondents who had visual impairment for ≥ 1 year were almost 18 times more likely to screen positive to depression than those who had < 1 year of visual impairment (OR, 17.64; 95% CI, 7.0 - 44.3). Compared with persons with mild visual impairment, those with severe visual impairment were 235 times more likely to be depressed (OR, 235.53; 95% CI, 66.8 - 829.7). Shown in table 3.

Variables	Odds ratio	p-value	95% CI Lower Upper	
<b>Gender</b> Male Female	1.35 Reference	0.160	0.891	2.042
<b>Age</b> ≥ 50 years < 50 years	5.49 Reference	< 0.001*	3.248	9.294
<b>Marital status</b> Not currently married Married	10.29 Reference	< 0.001*	3.701	28.636
Unemployed Employed	2.67 Reference	< 0.001*	1.743	4.086
<b>Visual impairment (Grade)</b> Mild Moderate Severe	Reference 25.12 235.53	< 0.001* < 0.001*	7.682 66.864	82.156 829.74
<b>Visual impairment Duration</b> ≥ 1 year < 1 year	17.64 Reference	< 0.001*	7.025	44.339
<b>History of Diabetes mellitus</b> Yes No	3.16 Reference	0.002*	1.546	6.479
<b>History of Hypertension</b> Yes No	3.73 Reference	< 0.001*	2.366	5.912
<b>History of Ocular surgery</b> Yes No	1.86 Reference	0.552	0.242	14.266

Table 3: Binary logistic regression model for factors predicting depression.

The statistically significant predictors of depression on binary logistic regression were analyzed using multivariate logistic regression to control for possible confounders. The grade and duration of visual impairment, unemployment and a history of hypertension emerged as the independent predictors of the occurrence of depression in this sample. See table 4.

Variables	Adjusted Odds ratio (AOR)	95% CI	p-value
Age	1.46	0.53 - 4.00	0.465
Marital status	1.81	0.26 - 12.68	0.551
Unemployment	1.75	0.78 - 3.91	0.014
Grade of visual impairment	8.21	4.19 - 79.13	< 0.001
Duration of visual impairment	10.05	3.40 - 29.65	< 0.001
Medical history of Diabetes mellitus	2.11	0.67 - 6.65	0.202
Medical history of Hypertension	2.23	1.10 - 4.54	0.027

**Table 4:** Multivariate logistic regression model for factors predicting depression.

**Discussion**

In this study, the proportion of visually impaired respondents who had depression was 27.1%. This value is similar to 23.5% reported by Rovner and Casten [12] in a hospital-based study, but higher than 13.5 - 16% from previous reports [6,7] derived from population-based studies. It was also higher than 6% among glaucoma patients who may not necessarily have been visually impaired reported by Dawodu., *et al.* [17] in Benin. It is however lower than 38.6 - 45.2% reported among visually impaired elderly people by Rovner and Shmueli-Dulitzki [14] and Ip., *et al.* [15] as the tendency of developing depressive symptoms is higher among the aged population.

There was a significant association between the grade of visual impairment and depression (p value = < 0.001) in this study. The proportion of respondents with depression increased as severity of visual impairment worsened. This is similar to findings in previous studies [6,13,15] where a positive relationship between severity of visual impairment and rate of depression was reported and the depressed group had worse visual acuity in the better eye compared to the non-depressed group.

It is plausible to explain the relationship between visual impairment and depression in several ways. First, one can speculate that visual impairment leads to disability which in turn leads to depression. Secondly, depression can be triggered by the fear of anticipated visual loss or blindness in visually impaired individuals. Thirdly, as an individual’s self-perception of his or her health decreases, the magnitude of self-reported depression will increase along with a decrease in the visual acuity.

Some studies [15,18] have found that the longer the duration of vision loss, the less it is associated with emotional distress and depression suggesting that the initial experience of vision loss is a trigger for depression, and that some resolution occurs over time. In this study, duration of visual impairment was significantly associated with depression (p value = < 0.001). This may be due to the anticipated fear and disability that comes with the process of losing one’s sight as this study population included only visually impaired adults and excluded blind individuals.

**Conclusion**

This study has shown depression to be common and is often undiagnosed among visually impaired patients. A significant direct relationship between severity and duration of visual impairment and rate of depression was observed. The results indicate the need to screen visual impaired subjects for depression and possible referral for treatment.

Future studies would need to consider the effect of intervention treatment for depression as well as outcome of improvement in visual acuity on depression scores amongst the visually impaired attending the Eye Clinic setting.

**Ethical Approval and Consent to Participate**

Ethical approval and clearance was obtained from the joint Ethical Committee of the University of Ibadan/University College Hospital, Ibadan and written informed consent was obtained from each participant.

### Consent for Publication

All participants consented to the possible publication of this article, following consenting to participate. Written informed consent was obtained from the participants for publication of their individual details and accompanying images in this manuscript. The consent form is held by the lead author and is available for review by the Editor-in-Chief.

### Availability of Supporting Data

All necessary data to support the publication of this research is available and can be provided when requested for.

### Competing Interests

There is no conflict of interest.

### Funding

This research work was funded by the lead author. No grant was sought nor received for this research.

### Author's Contribution

The lead author Dr. Bitto Sewuese was the lead investigator for the research. Prof. Bekibele and Prof. Gureje contributed intellectual content, provided literature for review and professional advice while the statistical framework and analysis was done by Dr. Bitto, Terkaa.

### Acknowledgements

The authors thank the participating patients, the head of department (Prof. A. O. Ashaye) and all other medical staff of the department of ophthalmology, University College Hospital, Ibadan, Oyo State, Nigeria for their professional support.

### Bibliography

1. Thylefors B., *et al.* "Global data on blindness". *Bulletin of the World Health Organization* 73.1 (1995): 115-121.
2. Mariotti SP. "Global data on visual impairment in the year 2010". Publication of WHO (2010).
3. American Psychiatric Association. "Major Depressive Disorders. Diagnostic and Statistical Manual of Mental Disorders 5<sup>th</sup> Edition" (2013).
4. World Health Organization (2012).
5. Paz SH., *et al.* "Relationship between self-reported depression and self-reported visual function in Latinos". *Archives of Ophthalmology* 121.7 (2003): 1021-1027.
6. Evans JR., *et al.* "Depression and anxiety in visually impaired older people". *Ophthalmology* 114.2 (2007): 283-288.
7. Carabellese C., *et al.* "Sensory impairment and quality of life in a community elderly population". *Journal of the American Geriatrics Society* 41.4 (1993): 401-407.
8. Rovner BW and Ganguli M. "Depression and disability associated with impaired vision: the Mo Vies Project". *Journal of the American Geriatrics Society* 46.5 (1998): 617-619.
9. Horowitz A and Reinhardt JP. "Adequacy of the mental health system in meeting the needs of adults who are visually impaired". *Journal of Visual Impairment and Blindness* 100 (2006): 871-874.
10. Kirkwood BR and Sterne J. "Essentials of Medical Statistics". 1<sup>st</sup> Edition: Blackwell Scientific Publications (1988).
11. Fenwick EK., *et al.* "Detection and Management of Depression in patients with vision impairment". *Optometry and Vision Science* 86.12 (2009): 948-954.

12. Rovner BW and Casten RJ. "Neuroticism predicts depression and disability in age-related macular degeneration". *Journal of the American Geriatrics Society* 49.8 (2001): 1097-1100.
13. Brody BL, et al. "Depression, visual acuity, comorbidity, and disability associated with age-related macular degeneration". *Ophthalmology* 108.10 (2001): 1893-1900.
14. Rovner BW and Shmueli-Dulitzki Y. "Screening for depression in low-vision elderly". *International Journal of Geriatric Psychiatry* 12.9 (1997): 955-959.
15. Ip SP, et al. "Depression in institutionalized older people with impaired vision". *International Journal of Geriatric Psychiatry* 15.12 (2000): 1120-1124.
16. Roy Wilson M, et al. "Depression in patients with glaucoma as measured by self-report surveys". *Ophthalmology* 109.5 (2002): 1018-1022.
17. Dawodu OA, et al. "Common psychiatric disorders in glaucoma patients as seen at the University of Benin Teaching Hospital, Benin City, Nigeria". *Journal of Medicine and Biomedical Research* 3.1 (2004): 42-47.
18. Williams RA, et al. "The psychosocial impact of macular degeneration". *Archives of Ophthalmology* 116.4 (1998): 514-520.
19. Horowitz A. "The prevalence and consequences of visual impairment in later life". *Topics in Geriatric Rehabilitation* 20.3 (2004): 185-195.
20. Beck AT, et al. "An inventory for measuring depression". *Archives of General Psychiatry* 4.6 (1961): 561-571.
21. Awaritefe A. "The Beck Depression Inventory in relation to some commonly used tests a Nigeria". *Nigerian Journal of Basic Psychology* 1 (1998): 23-28.
22. Beck AT, et al. "Psychometric properties of the Beck Depression Inventory - Twenty-five years of evaluation". *Clinical Psychology Review* 8.1 (1988): 77-100.
23. Arnarson TO, et al. "The Beck Depression Inventory Second Edition (BDI-II): Psychometric properties in Icelandic student and patient populations". *Nordic Journal of Psychiatry* 62.5 (2008): 360-365.
24. Ambrosini PJ, et al. "Concurrent validity and psychometric properties of the Beck Depression Inventory in outpatient adolescents". *Journal of the American Academy of Child and Adolescent Psychiatry* 30.1 (1991): 51-57.
25. Kapci EG, et al. "Beck Depression Inventory II: evaluation of the psychometric properties and cut-off points in a Turkish adult population". *Depress Anxiety* 25.10 (2008): E104-E110.

**Volume 10 Issue 7 July 2019**

**©All rights reserved by Bitto Sewuese, et al.**