

Burden and Severity of Depression in Nigeria: Relationship and Association with Visual Impairment

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Abstract

The study investigated the burden and severity of depression in relationship with visual impairment in Nigeria. Four hundred (400) male and female in and outpatients with various degrees of visual impairment attending a clinic in the department of ophthalmology, Enugu State University Teaching Hospital, Parklane Enugu were used. They were selected through the purposive sampling method. The socio-demographic questionnaire, Beck depression inventory and WHO-VFQ (visual function questionnaire) were used to collect data. The result showed that the domains of vision-related health status were negatively related to depression at (-0.4) also general vision (-0.09), ocular pain (-0.23), vision-specific mental health (-0.03), role difficulties (-0.03), role difficulties (-0.03), dependency (-0.09), color vision (-0.30) and peripheral vision (-0.13) and vision-specific social functioning. Domains of near acuity and vision specific social functioning were positively related, but the only statistically significant domain was vision-specific social functioning at (0.30, $p < 0.001$). It was suggested that hospitals, families and other social groups should ensure that they provide social and emotional support to the visually impaired using their facilities.

Keywords

Depression, Visual Acuity, Visual Function, Vision-Targeted Health Status

1. Introduction

Visual impairment (VI) represents a substantial and often irreversible loss in visual acuity or visual field. Visual impairment is the functional limitation of an eye or the visual system and is characterized by a decreased ability to see an ob-

ject clearly, either at a distance or near, and not corrected through conventional treatments such as optical, medical, and surgical methods [1]. International classification of diseases (ICD 11) classifies vision impairment into the distance and near present. Distance vision impairment includes mild, moderate, severe and blindness, while near vision impairment involves near vision acuity worst than N6 or M.08 at 40 cm only.

According to WHO, the leading causes of vision impairment are cataracts, uncorrected refractive errors, age-related macular degeneration, glaucoma, diabetic retinopathy, corneal opacity and trachoma. Impairments in visuals are highly prevalent affecting roughly 2.2 billion people worldwide [1]. Among the visually impaired are the blind 36 million, and an estimated 216 million marked moderate to severe distant vision impairment [2]. In a developed country like the United States of America, age-related vision loss is a leading cause of disability among aging adults, primarily resulting from eye diseases such as muscular degeneration cataracts, glaucoma, and diabetic retinopathy [3].

The global prevalence of visual impairment, which was estimated in 2010, indicates that 285 million (4.2%) people have visual impairments, of which 39 million (0.6%) people are blind, and 246 million (3.7%) people have low vision, and in the region of Africa, 26.3 million people have a visual impairment. Of these, 20.4 million have low vision and 5.9 million are blind. This estimation showed that 15.3% of the world's blind population lives in Africa [4]. According to a report of a survey done in West Africa, the prevalence of visual impairment and blindness was 17.1% and 1.2%, respectively. After refraction and spectacle correction, the prevalence of visual impairment and blindness decreased to 6.7% and 0.75%, respectively [5]. Nigeria falls into the category of the region with a greater number of low-income earners. The prevalence of vision impairment in low and middle-income regions is estimated to be four times higher than in high-income regions [6].

As the prevalence of visual impairment continues to rise, so does the need to better understand the wide-ranging impact of these impairments on an individual's mental health and quality of life. Visual impairment is associated with reduced quality of life, [7] mental health problems such as depression and anxiety [8]. About one-third of people with visual impairment experience sub-threshold depression and anxiety, while around 5% to 7% have a major depressive disorder and 7% have an anxiety disorder, with a higher percentage than those having healthy vision [9].

Visual impairment can cause physical, economic, and psychological impacts, which lead to a reduced quality of life. In another way, visually impaired people have difficulty and discomfort in doing their daily living activities. The association between visual function loss and depression is complicated. Depression and disability may exist in a bidirectional relationship in which depression leads to disability and in which disability causes depression [10]. Although it is not possible from this cross-sectional analysis to determine whether depression is a cause or an effect of visual function loss, it may be that people with depressive

symptoms have actual physical limitations or perceived limitations. Individuals whose lifestyles have been influenced by a real or perceived reduced ability to perform instrumental activities of daily living (such as reading a medication label, recognizing a face, writing a check, or driving a vehicle) have been shown to be at higher risk for depression [11].

Even though visual impairment has multiple impacts on different aspects of the life of an individual like physical, socioeconomic and mental health, recent scientific evidence about this clinical morbidity on mental health is limited in Nigeria especially in South Eastern part.

2. Methods

2.1. Study Design and Setting

Participants for the study were 400 outpatients with visual impairment in the department of ophthalmology, Enugu State University Teaching Hospital, Parklane Enugu. They were selected through the purposive sampling method. Consent forms were distributed to 416 (four hundred and sixteen) consented participants who accepted to participate in the study but 400 (four hundred) participants who completed the questionnaire carefully were used. Socio-demographic questionnaire, Beck depression inventory and WHO-VFQ (visual function questionnaire) were used to collect data. Socio-demographic questionnaire gave information about the participants' age, gender, marital status, educational status, occupation, ethnicity and religion.

2.2. Instruments

Two instruments were used for this study. They were Beck's Depression Inventory and Visual function questionnaire.

Beck's depression inventory, 2nd edition (BDI-11) is a 21-item instrument and one of the most commonly used for analyzing and screening the intensity of depression. It assesses 4 components of depression viz, cognitive, behavioral affective and somatization [12]. Each item is scored on a scale of 0 to 3 and ratings are summed up to yield a total score that can range from 0 to 6. The higher the score, the more severe the depressive symptoms. It is widely used and has been validated for use in Nigeria and a score of 18 and above indicated a depressive disorder. The total score ranges between 0 - 63. (1 - 10) Normal, mild (11 - 16), Borderline (17 - 20) Moderate (21 - 30), severe (31 - 40) and Extreme (>40). The BDI-11 has been positively correlated with the Hamilton Depression Rating Scale (HDRS) with a Pearson of 0.17, showing good agreement. It also has high test-retest reliability (Pearson $r = 0.93$) and high internal consistency ($r = 0.91$) [13] [14].

National Eye Institute Visual Functioning Questionnaire (NEI-VFQ-25) [15]: The NEI-VFQ was the primary patient reported outcome measured with the three additional questions included in both the near and distance activities subscales. The NEI-VFQ-25 contains a reduced number of items within each subscale of

the original 51-item NEI-VFQ [16]. The 12 subscales in the NEI-VFQ-25 are general vision, near vision, distance vision, driving, peripheral vision, colour vision, ocular pain, general health and vision-specific role difficulties, dependency, social function and mental health. The subscales are calculated by summing the relevant items and transforming the raw scores into a 0 to 100 scale where higher scores indicate better functioning or well-being. The total score of the NEI-VFO-25:5 is an average of 11 subscale scores, excluding the single item general health subscales. Previous studies have demonstrated the reliability and validity of the NEI-FVQ-25 in different ocular disease groups including AMD [15]. The authors stated that 'its convergent validity has also been found.

2.3. Design & Statistics

This is a cross-sectional design and multiple regressions were used to statistically analyze the study hypothesis.

3. Result

Prevalence of Depressive Disorder in Patients with LVI: Association with Types of Ocular Diagnosis and Vision-Related Health Status

Out of 400 study participants which were mostly middle-aged with a mean age of 57 years that were visually impaired, and 208 (52.0%) were males and 192 (48.0%) were female adults. The majority of the study participants, that is, 362 (90.5%) were married and singles were 38 (9.5%), occupational status; civil servants/professionals were 106 (26.5%), traders 89 (22.3%), artisans 8 (2.0%), students 25 (6.3%), retirees 113 (28.2%), unemployed 17 (4.3%). Educational status: primary 155 (38.8%), secondary 140 (35.0%), tertiary 105 (26.3%). Christian 398 (97.3%), Islam 7 (1.8%) and traditionalist 4 (1.0%). 191 (47.80%) participants were found to have major depressive disorder, ranging from mild 53.09%, moderate 36.06% and severe 10.50% (As shown in **Table 1**).

The result of **Table 2** above showed that 58.4% of depressive patients had moderately severe visual impairment, 15.3% had severe visual impairment, 23.0% had legal blindness while 3.3% were with total blindness.

102 patients out of 191 with major depressive disorder were found diagnosed with a mild-moderate depressive episode, comprising of 48.0% with moderately severe visual impairment, 19.6% with severe VI, 26.5% with legal blindness and 5.9% were totally blind.

The result of the moderately depressed patients were obtained as 53.6% by moderately severe visual impaired, severely visual impaired achieved a score of 21.7%.

Only patients with moderately severe, severe impairment and legal blindness were severely depressed with the distribution of 85%, 5% and 10% respectively.

Table 2 shows that out of 191 depressed patients with ophthalmic diagnosis, Glaucoma (51.3%), Cataract (8.4%), dual diagnosis (1%), >2 diagnosis (31.4%)

Table 1. Socio-demographic characteristics of the study participants.

Variables	n%	Mean (SD)
Mean age (year)		57.27 (16.34%)
Age group (years)		
18 - 30	36 (9.)	
31 - 40	39 (9.8)	
41 - 50	58 (14.5)	
51 - 60	69 (17.3)	
61 - 70	109 (27.3)	
>70	89 (22.3)	
Gender		
Male	208 (52.0)	
Female	192 (48.0)	
Marital status		
Single	38 (9.5)	
Married	362 (90.5)	
Educational status		
Primary	155 (38.8)	
Secondary	140 (35.0)	
Tertiary	105 (26.3)	
Occupation		
Civil servants/professionals	106 (26.5)	
Traders	89 (22.3)	
Artisans	8 (2.0)	
Students	25 (6.3)	
Retirees	113 (28.2)	
Unemployed	17 (4.3)	

and others (7.9%).

Moderately severe depression was recorded in Glaucoma patients (56.5%), Cataract (4.3%), >2 diagnosis (31.9%) and others (7.2%) while none for dual diagnosis.

In addition, **Table 2** showed severe depression among glaucoma patients at 75%, >2 diagnosis at 20% and others at 5%.

The result of **Table 3** shows that the domains of vision-related health status was negatively related to depression at (-0.4) also general vision (-0.09), ocular pain (-0.23), vision-specific mental health (-0.03), role difficulties (-0.03), role difficulties (-0.03), dependency (-0.09), color vision (-0.30) and peripheral vision (-0.13) and vision-specific social functioning.

Table 2. The association between patterns of LVI, diagnoses and major depressive disorder.

Variables	MDD		OR (95% CI)		Severity of MDD			OR (95% CI)
	Present	Abscent	n = 400		Mild	Moderate	Severe	n = 191
			p-value					p-value
LVI Pattern	(%)	(%)	0.38		(%)	(%)	(%)	0.07
MS	58.4	53.9	56.25		48.0	53.6	85.0	
S	15.3	18.8	17		19.6	21.7	5.0	
LB	23.0	20.9	22		26.5	15.9	10.0	
TB	3.3	16.3	4.8		5.9	8.7	0.0	
Total	209	191			102	6920		
Diagnosis			0.03					0.04
Glaucoma	56.0	51.3	4.5 (1.4 - 13.9)		43.1	56.5	75.0	3.1 (0.4 - 26)
Cataract	12.9	8.4	6.3 (1.8 - 22.4)		12.7	4.3	0.0	0.2 (0.0 - 6.4)
Dual diagnoses	1.0	1.0	3.8 (0.4 - 35.5)		2.0	0.0	0.0	1.2 (0.0 - 41)
>2 diagnoses	28.2	31.4	3.7 (1.2 - 11.8)		33.3	31.9	0.0	1.0 (0.1 - 10)
Others+	1.9	7.9	-		8.8	7.2	5.0	-
Total	209	191			102	69	20	

MS = Moderately severe, S = Severe, LB = Legal Blindness, TB = Total Blindness, OR = Odd Ratio, CI = Confidence Interval.

Table 3. Relationship between the scores of depression and vision-related health status domain.

Vision-Related Health Status	Beck's Depression Inventory
Spearman's correlation coefficient (p-value)	
General health	-0.14 (0.007)
General vision	-0.09 (0.06)
Ocular pain	-0.23 (<0.001)
Near activities	0.01 (0.09)
Vision Specific: social functioning	0.30 (<0.001)
Vision Specific: mental health	-0.03 (<0.001)
Vision Specific: role difficulties	-0.03 (0.51)
Vision Specific: dependency	-0.09 (0.62)
Driving: colour vision	-0.03 (<0.001)
Driving: peripheral vision	-0.13 (0.01)

Moreover, it also showed that the domains near acuity and vision-specific social functioning were positively related, but the only statistically significant domain was vision-specific social functioning at (0.30, $p < 0.001$).

4. Discussion

The aim of the study focused on the burden and severity of depression, especial-

ly the relationship between vision-targeted health status and depression among eye clinic patients of ESUT, Enugu, Nigeria.

Generally, depression has been hypothesized to be associated with poor visual impairment. In this research, the hypothesis was accepted and this shows that there is a statistically significant relationship between scores of vision-related health status and depression.

[17] examined social relationships and depression during the covid-19 lockdown. They used a sample of 71,117 participants domiciled in the UK. And results revealed that those with higher levels of perceived social support had markedly lower depression symptoms and depression risk. They also reported that both more frequent face-to-face and phone/video contact were associated with lower depressive symptoms, including when mutually adjusted for one another, and in-person contact had more effect than digital contact. In this research, it's has shown that individuals with high vision-specific social function will most likely experience an increase in depressive symptoms.

[18] investigated the association between depression and functional vision loss in persons 20 years of age or older in the United States, NHANES 2005-2008. They used a total of 10,480 US adults and found that after controlling for age, sex, race, ethnicity, marital status, living alone or not, education, income, employment status, health assurance, body mass index, smoking, binge-drinking, general health status, eyesight worry, and major chronic conditions, self-reported visual function less remained significantly associated with depression, whereas the association between presenting visual acuity impairment and depression was no longer statistically significant.

[19] in a study conducted in South East Nigeria. This was a cross-sectional study involving adult glaucoma patients who attended the eye clinic of Enugu State University Teaching Hospital, Parklane, Enugu, from April to September 2018. In total, 182 glaucoma patients with no other significant ophthalmic or medical conditions were recruited. They found that majority of the participants had an advanced stage of primary open-angle glaucoma. Eighty (44%) of the participants had anxiety, while 76 (41.8%) had depression. Severe/blind stage of glaucoma and reduced visual acuity were significantly associated with anxiety and depression; occupation (trading) and intraocular pressure of <21 mmHg were also significantly associated with depression.

Therefore, it is correct to say that there is a significant relationship between vision social functioning and depression, even though the nature of the relationships can be explained by other factors the researchers may or may not have put so much emphasis on. For instance, if the visual impairment was from birth or acquired after birth. It is obvious that when an individual's vision is clear, there is a high probability that visual information accessed and stored affects one's decision-making, thereby making an individual prone to depression as a result of the visual information being misinterpreted. Perhaps an individual's vision when interrupted or becomes unclear, could affect the person's emotional

state and therefore possible of exposing the person to compulsive thought, deflated self-esteem or even rumination over the condition as a punishment for the sins committed by oneself or a generational curse as found in the belief of some Igbo people in Nigeria. Generally, blindness and decline in visual social functioning affect one's perception of self and form a basis for general belief.

In this study, the result of the relationship between depression and domains of vision related health status has shown that when there is a decline in general vision, marked presence of ocular pain, vision-specific mental health, role difficulties, role difficulties, dependency, color vision, peripheral vision and vision-specific social functioning, there will be marked increase in depressive symptoms.

5. Conclusions

Depression has remained one of the fastest spreading mental health challenges found among the general population. It has also been found by many researchers as a very distressing condition among individuals with visual impairment, as it is very impactful on their social, vocational and financial domains. Other researchers have also found a relationship between depression and visual impairment including [19].

In this study, it was hypothesized that there would be a relationship between depression and vision-related health status. It was found in this study that depression and domains of vision-related health status show that when there is a decline in general vision and other domains, one is depressed.

One of the limitations of this study is the inability to obtain from the participants the duration of their visual impairment as it would have given a clearer understanding of the degree of depression when comparing depression and other domains of vision-related health status. This simply suggests that the degree of depression in patients can be associated with the length of time they have had vision problems. Thus, further research is encouraged as regards that.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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