









Original Research Report

ANXIETY DISORDER AMONG OLDER ADULTS WITH VISUAL IMPAIRMENT IN EKITI, NIGERIA: IMPLICATIONS FOR THE POTENTIAL OPPORTUNITY TO MITIGATE THE IMPACT OF THE DISABILITY AND PREVENT PSYCHOLOGICAL HARM

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ABSTRACT

Visual impairment is a significant morbidity among adults globally. It has negative impacts on work force participation and productivity, as well as higher depression and anxiety disorder rates. In the case of older adults, vision impairment can contribute to social isolation and a greater likelihood of early entry into nursing or care homes. This hospital-based, cross-sectional study was designed to determine anxiety disorder's prevalence among the study population and which Impact of Visual Impairment (IVI) domain is most correlated with anxiety disorder. The study was carried out at the Ophthalmology Clinic of the Ekiti State University Teaching Hospital, Ado Ekiti, Nigeria. Questionnaires were used to collect information from 115 respondents. Information sought included sociodemographic information, anxiety status, and visual impairment's impact on daily functions. The Hospital Anxiety and Depression Scale (HADS) was used to assess anxiety disorder, while the IVI scale was used to assess the impact of visual impairment. The IVI scale is an instrument used for determining the impact of visual impairment under three domains: (reading and accessing information, mobility and independence, and emotional well-being). Anxiety disorder was detected in 10.4% of all the respondents, and the IVI's mobility and independence domain of IVI was most strongly correlated with anxiety disorder.

Keywords: Older adults; Impact of Visual Impairment; anxiety disorder; psychological harm; mental disorder

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Highlights:

1. Anxiety is an important morbidity among visually impaired older adults.
2. There is potential for stakeholders to specifically channel their interventions towards particular IVI domains in order to reduce anxiety prevalence.

INTRODUCTION

Globally, at least 2.2 billion people have a near or distant vision impairment. In about half of these cases, a visual impairment could still be prevented or has yet to be addressed ([World Health Organization 2022](#)). Approximately 26.3 million people in the African region have a form of visual impairment. Of these, 20.4 million have low vision

and 5.9 million are estimated to be blind ([World Health Organization 2021](#)). The 2019 definition of visual impairment by the World Health Organization (WHO), as quoted by [Naipal & Rampersad \(2018\)](#), is a disorder that occurs in a person who has impairment of visual functioning even after treatment and/ or standard refractive correction, a visual acuity (VA) of less than 6/18 to light perception, or visual field of less than 10

degrees from the point of fixation, but who uses or is potentially able to use vision for the planning or execution of tasks.

According to the WHO, visual impairment severely impacts the quality of life among adult populations. Adults with visual impairment often have lower rates of work force participation and productivity, as well as higher rates of depression and anxiety disorder. Visual impairment in older adults can contribute to social isolation, difficulty walking, a higher risk of falls and fractures, and a greater likelihood of early admission to nursing homes or care facilities ([World Health Organization 2022](#)). The eleventh revision of the International Classification of Diseases (ICD-11) classified distance visual impairment into four categories: mild (VA worse than 6/12 to 6/18), moderate (VA worse than 6/18 to 6/60), severe (VA worse than 6/60 to 3/60), and blindness (VA worse than 3/60) ([World Health Organization 2022](#)).

[Malhotra et al. \(2018\)](#) found a visual impairment prevalence of 24.5% among older adults in a rural community in northern India. Another study reported that glaucoma was most commonly found in people aged 50-64 years ([Yolanda et al. 2021](#), [Praba et al. 2021](#)). Unfortunately, treatment of late-stage glaucoma through medication, surgery, and combination therapies did not result in significant improvement ([Pratista et al. 2022](#)). In Nigeria, the National Blindness and Visual Impairment Survey conducted in 2005-2007 reported that 4.2% of people aged >40 years were blind and 11.5% had moderate to severe visual impairment ([Gascoyne et al. 2022](#)).

The Hospital Anxiety and Depression Scale-Anxiety Subscale (HADS-A) has been used to demonstrate a link between visual impairment and anxiety disorder in older adults, focusing on the prevalence of anxiety disorder and the related risk factors ([Kempen & Zijlstra 2014](#), [Heesterbeek et al. 2017](#)). Impaired vision is associated with difficulty in daily tasks, and addressing this is the primary goal of vision rehabilitation. Although the Impact of Visual Impairment (IVI) questionnaire was designed to assess the rehabilitation needs of visually impaired persons, the results of its use can guide clinicians in taking preventative measures to either delay or prevent morbidities associated with visual impairment.

The objectives of this research were, firstly, to determine the prevalence of anxiety disorder among the study population and, secondly, to identify which domain of the IVI is more correlated with anxiety disorder. This second objective was significant due to the scarcity of literature on the topic. It would help clinicians and policymakers

mitigate the impact of visual impairment by targeting a particular domain of the IVI for intervention and potentially lowering the prevalence of anxiety disorder.

MATERIALS AND METHODS

This cross-sectional study was carried out at the Ophthalmology Clinic of Ekiti State University Teaching Hospital, Ado Ekiti, Nigeria, over a period of three months from September to November 2022. All consenting older adults aged 60 and above who presented at the clinic and consented to participate in the study were consecutively recruited on a daily basis.

Information sought from the respondents included the socio-demographic characteristics and duration of visual impairment. The Impact of Vision Impairment (IVI) questionnaire was used to assess the impact of visual impairment, while the Hospital Anxiety and Depression Scale-Anxiety Subscale (HADS-A) was used to assess anxiety. The respondents were classified into normal, borderline, and abnormal groups. Their visual acuity was evaluated by an ophthalmologist and an ophthalmic nurse who had been trained on the study's protocol and procedures. The IVI questionnaire consists of 28 items that measure the impact of visual impairment on participation in daily activities across three domains, i.e., reading and accessing information, mobility and independence, and emotional well-being. The IVI has been used and validated by researchers in various settings ([Finger et al. 2014](#), [Ratanasukon et al. 2016](#)). The HADS is a valid method for assessing anxiety disorder and depression among older adults through a 14-item questionnaire ([Djukanovic et al. 2017](#)). The scale consists of two 7-item subscales for symptoms of anxiety disorder and depression. Each item is coded from 0 to 3. The respondents were classified as normal, borderline, or abnormal based on their HADS-A scores. A score of 0 to 7 indicated no anxiety symptoms, 8 to 10 indicated moderate and doubtful symptoms, and ≥ 11 indicated a confirmed case of anxiety.

IBM SPSS statistic for Windows, version 25.0 (IBM Corp., Armonk, N.Y., USA) was utilized as appropriate to perform analyses of the frequency distribution, Chi-square, Fisher's exact, and correlation. For statistical purposes, the IVI questionnaire scores were used to divide the respondents into two categories: those who scored <50% of the maximum score for the overall and each domain were classified as having a moderate impact, while those who scored $\geq 50\%$ were classified as having a severe impact. In addition, the visual impairment was graded as moderate,

severe, or blindness. The "mild impairment" class in the International Classification of Diseases was fused with "no impairment".

RESULTS

A total of 115 respondents participated in this study. The age of the respondents was between 60 and 102 years, with a mean age of 71.4 ± 8.30 years. The majority of the respondents (80%) were between the ages of 60 and 79, with a female preponderance (56.6%). About half (50.4%) of the respondents had been suffering from visual impairment for one to five years. Most respondents (73.9%) were having moderate impairment, while (25.2%) were blind (Table 1).

Table 1. Socio-demographic characteristics of the respondents.

Age distribution (n=115)		
Age (year)	Frequency	Percentage (%)
60–69	57	49.6
70–79	35	30.4
80–89	18	15.6
90–99	4	3.5
≥100	1	0.9
Total	115	100.0
Sex distribution (n=113)		
Male	49	43.4
Female	64	56.6
Total	113	100.0
Marital status (n=112)		
Married	71	63.4
Divorced	6	5.4
Widow	35	31.2
Total	112	100.0
Duration of illness (n=113)		
Duration (year)	Frequency	Percentage (%)
<1	10	8.9
1–5	57	50.4
6–10	33	29.2
11–15	8	7.1
16–20	5	4.4
Total	113	100.0
Degree of vision impairment (n=115)		
Degree	Frequency	Percentage (%)
Moderate	85	73.9
Severe	1	0.9
Blindness	29	25.2
Total	115	100.0

The prevalence of anxiety disorder among the respondents was 10.4%. There was no statistically significant relationship between the respondents' socio-demographic characteristics or duration of illness and anxiety disorder (Table 2).

Table 2. Relationship between socio-demographic characteristics and anxiety disorder.

	N	B	AN	Fisher's exact test (2- sided)
Age (year)				
60–69	50	3	4	0.039
70–79	28	0	7	
80–89	16	2	0	
90–99	2	1	1	
≥100	1	0	0	
Sex				
Male	43	1	5	0.442
Female	53	5	6	
Religion				
Christianity	91	5	10	0.472
Islam	3	0	1	
Marital status				
Married	61	4	6	0.818
Divorced	5	0	1	
Widow	30	1	4	
Duration (year)				
<1	7	1	2	0.428
1–5	50	1	6	
6–10	27	3	3	
11–15	6	1	1	
16–20	5	0	0	
N=normal B=borderline AN=abnormal				

Table 3. Relationship between visual impairment and anxiety disorder.

Impairment	N	B	AN	Fisher's exact test (2-sided)
Moderate	76	3	6	0.007
Severe	0	1	0	
Blindness	21	2	6	
N=normal B=borderline AN=abnormal				

Table 4. Association between the overall impact of visual impairment and anxiety disorder.

	N	B	AN	Fisher's exact test (2-sided)
Moderate	85	2	80	0.000
Severe	12	4	4	
N=normal B=borderline AN=abnormal				

Table 3 demonstrates that there was a statistically significant association between visual impairment

and anxiety disorder (two-sided Fisher's exact=0.007). There was also a statistically significant association between the level of overall impact of visual impairment and anxiety disorder (two-sided Fisher's exact=0.000) (Table 4).

Table 5. Correlation between the three domains of the IVI and anxiety disorder.

Domain	Corr. Coeff	P-value
Reading and accessing information	0.246	0.008
Emotional well-being	0.463	0.000
Mobility and independence	0.663	0.000*

*Significant

Table 5 summarizes the correlations between anxiety disorder and the three domains of the IVI, i.e., reading and assessing information ($r=0.246$, $P=0.008$), emotional well-being ($r=0.463$, $P=0.000$), and mobility and independence ($r=0.663$, $P=0.000$).

DISCUSSION

This study discovered a 10.4% prevalence of anxiety disorder in the studied population. This is consistent with earlier findings that showed the prevalence of anxiety disorder among people with age-related macular degeneration ranged between 9.6% and 30% (Dawson et al. 2014, Cimarolli et al. 2015). The frequent consumption of antipsychotics and antidepressants among older adults might indicate that physical comorbidities influence mental disorders in this age group (Zhong et al. 2018, Dong et al. 2019). van der Aa et al. (2015) discovered a prevalence of 7.5% among visually impaired older adults using the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV) criteria. A study conducted by Gascoyne et al. (2022) in Nigeria reported that the prevalences of anxiety among male older adults were 12.7% and 12.4% among females. Another study, also conducted in Nigeria and employed the same instrument, found that the prevalences of anxiety among male and female participants aged 18 years and older with glaucoma and cataract were 35.5% and 21.8%, respectively (Okudo et al. 2021). Ulhaq et al. (2022) observed a 19.0% pooled prevalence of anxiety disorders among ophthalmic disease patients. The female preponderance in this study is also in agreement with previous studies (Aina et al. 2018, Fadare et al. 2021).

Previous findings support the established relationship between visual impairment, including its severity, and anxiety disorder. Demmin & Silverstein (2020) found an association between visual impairment and anxiety disorder. A study by

Gascoyne et al. (2022) in Kogi State, Nigeria, reported that severe visual impairment was more associated with anxiety disorder. Similarly, Assi et al. (2021) found that worse visual impairment was linked to lower quality of life. Various quality studies have provided findings on the associations between visual impairment and many factors, such as the well-being and functioning of the patients.

The demonstration of a strong positive correlation between the mobility and independence domain of the IVI and anxiety disorder was novel in this study, as there was a scarcity of literature on this topic. The findings of this study might be related to the psychopathology of anxiety disorder, which has been linked to worry and fear. The IVI questionnaire posed a question on the participants' concerns or worries about several factors due to their eyesight. The Diagnostic and Statistical Manual of Mental Disorders V (DSM-V) Workshop on Anxiety Disorder proposed four worry behaviors to be included in the diagnosis criteria of generalized anxiety disorder (GAD) (Brown & Tung 2018). Worry behaviors contributed modestly to the diagnostic classification of GAD and may be salient to treatment planning, treatment response, and the natural course of the disorder. This study therefore corroborated the relationship between worry behaviors and anxiety.

Most questions under the mobility and independence domain of the IVI were about the potentials that triggered a sense of fear or worry in the respondents. Fear experienced by older adults with a visual impairment included fear of moving around on an unknown territory, fear of falling, and fear of staying in a particular place or situation (Binder et al. 2020). Apart from the aforementioned kinds of fear, the mobility and independence domain of the IVI also included fear about safety inside and outside of the home, fear of going down steps or stairs, and fear of soiling or breaking things. Although the fear and anxiety conundrum has been a subject of debate, the two can be used interchangeably, which appears to be the position endorsed by the ICD-11 through the designation of the "anxiety or fear-related disorder" diagnostic group (World Health Organization 2019, Starcevic et al. 2020). It further shows that fear is closely linked to anxiety.

In terms of outcome, an association has been established between visual impairment and anxiety. Senra et al (2022) found that a higher degree of vision loss was associated with a poorer quality of life, and this relationship was stronger when the level of anxiety was high. Individuals suffering from anxiety have demonstrated significant impairment in global, social, occupational, and physical domains. Previous

research also emphasized the detrimental impact of anxiety on numerous functional domains of life, with a negative influence on quality of life (McKnight et al. 2016, Wilmer et al. 2021). Therefore, anxiety disorder deserves serious attention in the care of older adults with visual impairment.

Strength and limitations

This study's novelty is expected to contribute to the scarce literature on visual impairment as morbidity in older adults and its correlation to anxiety disorder. Stakeholders may use the findings of this study to direct interventions toward the mobility and independence domain of the IVI in order to minimize anxiety prevalence among older adults with visual impairment. However, because it was a hospital-based study, generalization may be a challenge because the findings may not be representative of the general population. Despite this limitation, the potential opportunity it provides in terms of knowledge, practice, and policy justifies its merit.

CONCLUSION

This work goes beyond demonstrating that visual impairment is associated with anxiety. As reported, it goes further to show which IVI domain correlates most with anxiety disorder. This finding has implications for preventing anxiety among visually impaired older adults. It has been suggested that studies should involve evaluations of worry behaviours' role in generalized anxiety disorders maintenance and treatment. This study's results will also improve services provided by clinicians and other stakeholders involved in rehabilitation. Clinicians can reduce worry and anxiety disorders among this group through counselling, which can be reinforced further during rehabilitation. The role of policy makers includes but is not limited to providing mobility devices and creating special passages for the visually impaired in public places.

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Conflict of interest

None.

Ethical consideration

This study was approved by the Ethics and Research Committee of Ekiti State University Teaching Hospital, Ado Ekiti, Nigeria, with a reference no. EKSUTH/A67/2022/09/003 on 01/09/2022.

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Author contribution

AFO, AIA, ATA, and FJO contributed to the literature conceptualization and review. AFO, OOJ, ATA, and PP contributed to the study design and methodology. AFO, AIA, OOJ, and AKO contributed to the data collection. AFO, DMU, FJO, and AKO contributed to the data analysis. AFO, ATA, FJO, DMU, AKO, and PP contributed to the discussion of this study's findings. All authors gave final authorization of the completed work.

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