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The influence of sociodemographic characteristics on vision-related quality of life in visually impaired patients

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ABSTRACT

Objectives: Self-reported vision-related quality of life (VRQOL) allows us to assess the effect of disease and treatments from the patient's perspective, focusing on an individual's subjective satisfaction and functional ability. The previous studies mostly focused on the impact of visual function deficits on VRQOL in patients with visual impairment. This study seeks to investigate the influence of sociodemographic characteristics on VRQOL in visually impaired patients.

Material and Methods: This prospective cross-sectional study included consecutive adult patients with visual impairment at the University of Calabar Teaching Hospital eye clinic. All patients had presenting visual acuity worse than 6/18 in the better eye. VRQOL was assessed by the validated English version 25-item National Eye Institute Visual Functioning Questionnaire. Sociodemographic characteristics and ocular parameters were recorded. Sociodemographic characteristics were evaluated based on age, sex, area of residence, marital status, religion, educational attainment, and monthly income. Each characteristic was stratified into groups or levels. Analysis of variance, including *post hoc* analysis was used to evaluate the association between sociodemographic characteristics and VRQOL.

Results: A total of 270 patients were enrolled. After adjustments for category and causes of visual impairment, older age ($P < 0.001$), rural dwellers ($P < 0.001$), widowhood ($P = 0.006$), and no formal education ($P < 0.001$) were significantly associated with low mean visual function (VF) scores. Similarly, older age ($P < 0.001$), rural dwellers ($P < 0.001$), widowhood ($P = 0.003$), and no formal education ($P < 0.001$) were significantly associated with low mean QOL scores. The difference in the mean score of VF and QOL by religion, sex, and monthly income was not statistically significant.

Conclusion: Besides the degree of visual impairment, the interplay of certain social and demographic factors plays a remarkable role in determining the QOL in visually impaired patients. Therefore, an individualized management plan, including psychosocial therapy is imperative in the care of visually impaired patients.

Keywords: Visual function, Quality of life, Sociodemographics, Visually impaired

INTRODUCTION

Vision-related quality of life (VRQOL) describes an individual's overall sense of well-being that is related to the individual's level of visual functioning.[1] Visual functioning is defined by two terms: Functional vision and visual function.[1] Functional vision describes how a person functions in vision-related activities; as opposed to visual function, which describes how the eyes and the visual system function. Functional vision is a broader measure than visual acuity, because it evaluates patients' ability to conduct activities of daily living (e.g., reading, driving,

writing, orientation and mobility, and face recognition), for which peripheral vision, contrast sensitivity, color vision, and visual acuity are important.[1] Visual function is defined by visual acuity, visual field, contrast sensitivity, color vision, dark adaptation, and stereopsis.[1] At present, the assessments of these parameters are the most-accepted clinical evaluation of visual function.[2] However, they have been shown to be inadequate in explaining poor performance in vision-related activities of daily living among visually impaired patients.

In recent years, self-perceptions of vision-related functioning and well-being have gained recognition as important measures to characterize more comprehensively the disability associated with visual impairment (VI).[3] Vision-related questionnaires and surveys have grown by a big margin[4-9] to provide key information about the impact of visual damage from the patients' perspective. However, the degree of visual impairment may not be the only factor that determines the VRQOL. Certain factors, such as environmental factors, personal factors, socio-cultural norms, social structure, age, and gender,[10] interplay to affect the individual's perception of functional vision and, by extension, the VRQOL [Figure 1]. The interactions of several factors, therefore, influence the visually impaired patient's perception of his/her QOL. Thus, the impact of the degree of VI and associated factors defines the concept of VRQOL.

Self-reported VRQOL allows us to assess the effect of disease and treatments from the patient's perspective, focusing on an individual's subjective satisfaction and functional ability. The previous studies mostly focused on the impact of visual function deficits on VRQOL in patients with visual impairment. This study seeks to investigate the influence of sociodemographic characteristics on VRQOL in visually impaired patients attending a tertiary eye care facility in South-South Nigeria.

MATERIAL AND METHODS

It was a prospective cross-sectional study conducted from August 2015 to March 2016 at the Eye clinic, University of Calabar Teaching Hospital (UCTH), Calabar, Cross River State, Nigeria. The study population consisted of consecutive patients aged ≥16 years presenting to the Eye clinic, UCTH, with a presenting visual acuity (PVA) of <6/18 in the better eye. Institutional ethical approval was obtained from the UCTH Health Research and Ethics Committee. Data were collected using a pretested, structured pro forma consisting of sociodemographics and oculo-visual parameters. The oculo-visual parameters were obtained by the most senior ophthalmologist in each clinic day. Each participant's PVA was assessed using a Snellen chart placed 6 m away from the participant in a well-illuminated area. The tumbling E chart was used for illiterate patients. Slit-lamp examination, tonometry, and funduscopy were used by the ophthalmologist to confirm the diagnosis. We took the ocular disease, which best explains the patients' visual reduction. For the cases which have more than one disease which can cause a visual reduction, we considered professional agreement done by three senior ophthalmologists in each clinic day and took the agreed cause of visual impairment which best explains patients' visual reduction as an ocular condition when at least two of the senior ophthalmologists agree. Afterward, the principal investigator administered on each participant a face-to-face interview using the interviewer administered, validated English version 25-item National Eye Institute Visual Functioning Questionnaire[7,8] to estimate VRQOL.

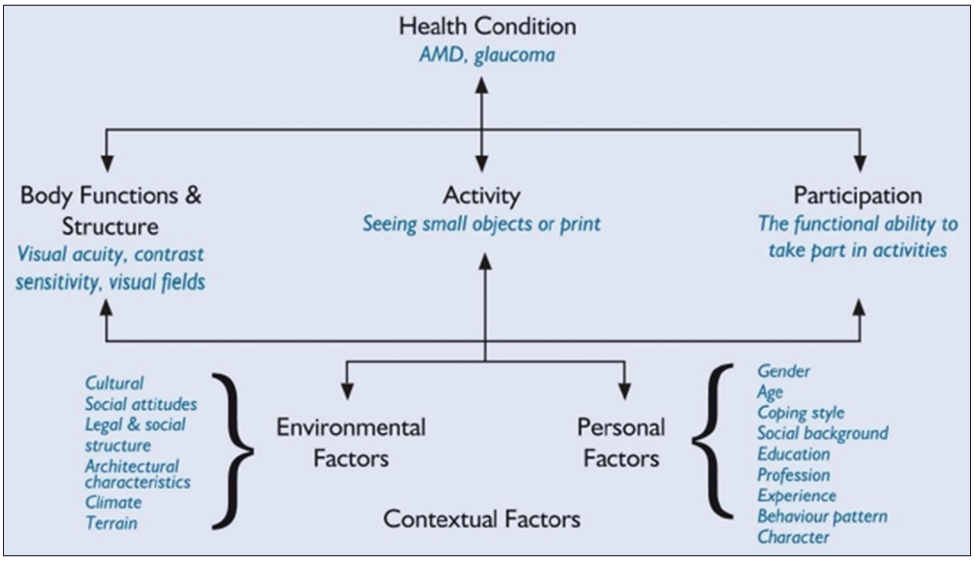

Figure 1: An interplay of factors that influence the vision-related quality of life.[11]

Sociodemographic characteristics were evaluated based on age, sex, area of residence, marital status, religion, educational attainment, and monthly income. Each characteristic was stratified into groups or levels [Table 1]. Data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) for Windows (version 20, SPSS inc., Chicago, IL, USA). Descriptive statistics (frequencies, proportions, means, and standard deviation) were used to summarize variables. Analysis of variance, including *post hoc* analysis was used to evaluate the association between sociodemographic characteristics and VRQOL. The statistical significance levels were set at $P < 0.05$.

Table 1: Sociodemographic characteristics of study participants (*n*=270).

Variables	Frequency	Percentage
Age (years)		
<20	5	1.9
20–39	63	23.3
40–59	111	41.1
60–79	80	29.6
≥80	11	4.1
Sex		
Male	152	56.3
Female	118	43.7
Residence		
Rural	73	27.0
Urban	197	73.0
Education		
None	24	8.9
Primary	47	17.4
Vocational	10	3.7
Secondary	64	23.7
Tertiary	125	46.3
Marital status		
Single	61	22.6
Married	207	76.7
Widowed	2	0.7
Religion		
Christianity	266	98.5
Islam	4	1.5
Occupation		
Professional	32	11.9
Agric. Worker	34	12.6
Public servant	43	16.0
Trading	47	17.4
Student	34	12.6
Clergy	14	5.2
Retired	47	17.4
Unemployed	13	4.7
Others	6	2.2
Income class		
High	4	1.5
Middle	190	70.4
Low	76	28.1
Ethnicity		
Efik	97	35.9
Ekoi	54	20.0
Ibibio	42	15.6
Annang	13	4.8
Ibo	55	20.4
Others	9	3.3

Definition of terms

The definitions below were with reference to the World Health Organization[11]

- PVA: Was defined by the visual acuity in the better eye using currently available refractive correction, if any. Where the participant has no refractive correction (distance glasses), the unaided distance VA defines the presenting vision
- Normal vision: ≥6/18 in the better eye
- Moderate visual impairment (MVI): <6/18–6/60 in the better eye
- Severe visual impairment (SVI): <6/60–3/60 in the better eye
- Blindness: <3/60 in the better eye
- Moderate VI combined with severe VI is grouped under the term "low vision:" Low vision taken together with blindness represents all visual impairment (VI).

Income class:[12]

- High: Average monthly income of > ₦100,000
- Middle: Average monthly income of ₦75,000 to ₦100,000
- Low: Average monthly income of < ₦75,000.

RESULTS

A total of 270 patients aged 18–90 years were enrolled and participated in the study. The mean age ± SD was 51.07 ± 16.91 years. Among study participants, 152 (56.3%) were males, more than two-thirds 210 (77.8%) were urban dwellers, and about half 125 (46.3%) had tertiary level of education [Table 1].

Sociodemographic features

Distribution of Sociodemographic characteristics and category of visual impairment

Table 2 shows the category of visual impairment by sociodemographic characteristics. Category of VI by age group ($P = 0.024$), income class ($P = 0.002$), place of residence ($P = 0.036$), marital status ($P = 0.002$), occupation ($P < 0.001$), and educational level ($P < 0.001$) showed statistical significance. That is, those 40–59 years, those in low-income class, rural dwellers, the married, the agricultural workers, and those with primary education, were more likely to be more severely impaired. However, the relationship

Table 2: Category of visual impairment by sociodemographic characteristics (*n*=270).

Variable	Moderate VI *n*=208 (38.5%)	Severe VI *n*=23 (4.3%)	Blindness *n*=39 (7.2%)	Chi-square test	*P*-value
Age group (years)					
<20	5 (0.9)	0 (0.0)	0 (0.0)	Fisher's exact	0.024*
20–39	43 (8.0)	9 (1.7)	11 (2.0)		
40–59	91 (16.9)	6 (1.1)	14 (2.6)		
60–79	65 (12.0)	8 (1.5)	7 (1.3)		
≥80	4 (0.7)	0 (0.0)	7 (1.3)		
Sex					
Male	113 (20.9)	15 (2.8)	24 (4.4)	1.507	0.681
Female	95 (17.0)	8 (1.5)	15 (2.8)		
Income class					
High	4 (0.7)	0 (0.0)	0 (0.0)	16.003	0.002*
Middle	159 (29.4)	13 (2.4)	18 (3.3)		
Low	45 (8.3)	10 (1.9)	21 (3.9)		
Residence					
Rural	39 (7.2)	8 (1.5)	26 (4.8)	Fisher's exact	0.036*
Urban	169 (31.3)	15 (2.8)	13 (2.4)		
Marital status					
Single	40 (7.4)	9 (1.7)	12 (2.2)	Fisher's exact	0.002*
Married	168 (31.1)	14 (2.6)	25 (4.6)		
Widowed	0 (0.0)	0 (0.0)	2 (0.4)		
Religion					
Christianity	204 (37.8)	23 (4.3)	39 (7.2)	0.802	0.770
Muslim	4 (0.7)	0 (0.0)	0 (0.0)		
Occupation					
Agricultural worker	22 (4.1)	2 (0.4)	10 (1.9)	43.749	<0.001*
Clergy	9 (1.7)	2 (0.4)	3 (0.6)		
Retired	39 (7.2)	4 (0.7)	4 (0.7)		
Professional	28 (5.2)	2 (0.4)	2 (0.4)		
Public servant	42 (7.8)	0 (0.0)	1 (0.2)		
Student	25 (4.6)	5 (0.9)	4 (0.7)		
Trading	32 (5.9)	5 (0.9)	10 (1.9)		
Unemployed	8 (1.5)	2 (0.4)	3 (0.6)		
Others	3 (0.6)	1 (0.2)	2 (0.4)		
Education					
None	13 (2.4)	2 (0.4)	9 (1.7)	54.240	<0.001*
Primary	27 (5.0)	4 (0.7)	16 (3.0)		
Secondary	56 (10.4)	2 (0.4)	6 (1.1)		
Vocational	6 (1.1)	2 (0.4)	2 (0.4)		
Tertiary	106 (19.6)	13 (2.4)	6 (1.1)		

*Statistically significant

between the category of VI and sex ($P = 0.681$), and religion was not statistically significant.

Distribution of causes of visual impairment

Table 3 shows the distribution of causes of visual impairment (VI) among the participants. Of decreasing frequency, refractive errors 97 (36.0%), cataract 75 (27.8%), and glaucoma 55 (20.4%) were the common causes of visual impairment. Among 75 participants who had cataract, 21 (28.0) were blind, and 10 (13.3%) had SVI, while 44 (58.7%) had MVI. Among 55 participants who had glaucoma, 12 (21.8%) were blind, and 2 (0.7%) had SVI while 41 (74.5%) had MVI. Refractive error was found among 97 participants, of which 2 (2.1%) were blind, and 7 (7.2%) had SVI while 88 (90.7%) had MVI. Other causes of visual impairment had a frequency of 43: 4 (9.3%) being blind, 4 (9.3%) having SVI, and 35 (81.4%) having MVI. In general, cataract accounted for the highest frequency among those who had blindness and SVI from a single cause, followed by glaucoma, then refractive errors, and other causes. This distribution of causes of visual impairment was statistically significant ($P < 0.001$).

Association of visual function and quality of life with sociodemographic characteristics of study participants

Table 4 shows the association of visual function (VF) and QOL with sociodemographic characteristics of study participants.

Visual function

A significant association was found between VF and age, residence, marital status, and level of education ($P < 0.05$). Significantly low mean VF scores occurred among those who were older, rural dwellers, widowed, and those who had no formal education. The difference in the mean score of VF by religion and sex was not statistically significant.

QOL

A significant association was found between QOL and age, residence, marital status, and level of education ($P < 0.05$). Significantly, low QOL mean scores occurred among those

Table 3: Distribution of causes of visual impairment (***n***=270).

Causes	Moderate VI *n*=208 (77.0%)	Severe VI *n*=23 (8.6%)	Blindness *n*=39 (14.4%)	Total *n*=270 (100.0%)	Chi-square test	*P*-value
Cataract	44 (58.7)	10 (13.3)	21 (28.0)	75 (100.0)	34.712	<0.001*
Glaucoma	41 (74.5)	2 (0.7)	12 (21.8)	55 (100.0)		
Refractive error	88 (90.7)	7 (7.2)	2 (2.1)	97 (100.0)		
Others#	35 (81.4)	4 (9.3)	4 (9.3)	43 (100.0)		

*Statistically significant. #Retinal diseases, corneal opacity, ocular trauma

Table 4: Association of visual function and quality of life with sociodemographic characteristics of study participants.

Characteristics	Total VF mean (95% CI)	Test statistics (*P*-value)	Total QOL Mean (95% CI)	Test statistics (*P*-value)
Age group (years)				
<20	74.2 (59.7–88.7)	ANOVA (0.560)	70.9 (53.3–88.4)	ANOVA (0.215)
20–39	80.2 (75.5–84.9)	ANOVA (<0.001*)	80.2 (75.0–85.4)	ANOVA (<0.001*)
40–59	76.4 (72.8–80.0)	ANOVA (0.003*)	79.7 (75.6–83.7)	ANOVA (<0.001*)
60–79	71.3 (67.2–75.5)	ANOVA (0.062)	72.8 (68.1–77.6)	ANOVA (<0.001*)
≥80	54.2 (38.3–70.2)	Reference category	44.0 (27.4–60.7)	Reference category
Sex				
Male	73.8 (70.6–77.0)	Reference category	75.9 (72.3–79.4)	Reference category
Female	76.1 (72.6–79.6)	*t*-test (0.337)	76.5 (72.5–80.6)	*t*-test (0.798)
Residence				
Rural	66.8 (70.6–77.0)	Reference category	64.9 (58.7–71.1)	Reference category
Urban	77.5 (75.0–80.1)	*t*-test (<0.001*)	79.7 (76.9–82.5)	*t*-test (<0.001*)
Marital status				
Single	74.7 (69.1–80.3)	Reference category	73.0 (67.0–79.1)	Reference category
Married	75.2 (72.6–77.7)	ANOVA (1.000)	77.3 (74.4–80.2)	ANOVA (0.609)
Widowed	13.5 (13.5–13.5)	ANOVA (0.006*)	0 (0.0–0.0)	ANOVA (0.003*)
Religion				
Christianity	74.7 (72.3–77.0)	ANOVA (0.222)	76.0 (73.3–78.7)	ANOVA (0.276)
Islam	87.6 (75.1–100.0)	Reference category	89.0 (69.7–108.2)	Reference category
Education				
None	51.2 (37.6–64.9)	Reference category	48.5 (33.5–63.5)	Reference category
Primary	62.7 (55.5–70.0)	ANOVA (0.385)	64.6 (56.8–72.5)	ANOVA (0.101)
Secondary	77.7 (74.2–81.3)	ANOVA (<0.001*)	78.2 (73.9–82.5)	ANOVA (<0.001*)
Vocational	57.8 (37.1–78.9)	ANOVA (1.000)	55.9 (31.8–9.9)	ANOVA (1.000)
Tertiary	81.1 (78.3–83.9)	ANOVA (<0.001*)	83.3 (80.2–86.5)	ANOVA (<0.001*)
Income class				
High	80.4 (59.7–101.1)	Reference category	85.0 (64.0–106.0)	Reference category
Middle	77.1 (74.5–79.7)	ANOVA (1.000)	79.0 (76.1–82.0)	ANOVA (1.000)
Low	67.3 (62.0–72.5)	ANOVA (0.501)	66.5 (60.5–72.5)	ANOVA (0.248)

*Statistically significant. ANOVA: Analysis of variance

who were older, rural dwellers, widowed, and those who had no formal education.

DISCUSSION

The limitations in health-care resources in developing countries like Nigeria may necessitate considering cost-effective measures for optimizing health care; hence, the QOL measures for interventions may gain increasing relevance in clinical practice in a setting like ours. This study had highlighted a hospital-based distribution of visual impairment and its effect on QOL.

In general, visual acuity is thought to be the most significant factor influencing VF and QOL scores; however, the variation of these scores observed with different causes of VI category suggests that factors other than VA also influence the VF and QOL scores. In this study, after controlling for VA, it was found that VF and QOL scores were significantly lower among specific groups. Significantly, low mean VF/QOL scores were noted among those who were older, rural dwellers, widowed, and those who had no formal education. Onakoya *et al*.[13] on QOL among glaucoma patients found that older age, female gender, and poor educational level negatively impacted on the QOL. Similarly, Tran *et al*.[14] had reported in their study on QOL and VF in Nigeria that people who are blind, older people, women, manual laborers, people living in rural areas, those living in the northern geopolitical zones, those practicing Islamic and Traditionalism faith, those not currently married, and those who have undergone coaching, had lower VF/QOL scores.

The findings in this study further corroborate the relationship between social and demographic factors to VRQOL. Although poor visual health status influences the QOL of an individual, the social and demographic milieu or disposition of such an individual also determines how far-reaching the impact of the deviation on daily functioning. Trillo and Dickinson[15] had observed that socially disadvantaged individuals such as widowhood, poor household class, are more impacted by visual impairment. They had opined that these specific groups are generally characterized by socio-economic deprivation, increasing competing health comorbidities, financial dependence, depreciating self-esteem, and poor socio-cultural orientation. For example, the social and emotional trauma of losing a spouse could lead to despair, loneliness, and helplessness. Cumulatively, these could negatively impact on the individual's sense of well-being independent of the degree of visual impairment.

CONCLUSION

Besides the degree of visual impairment, the interplay of certain social and demographic factors play remarkable role in determining the QOL in visually impaired adult patients. Therefore, an individualized management plan, including psychosocial therapy, is imperative in the care of visually impaired adult patients. Moreso, a targeted approach to eye delivery is highly recommended.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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