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VISION-RELATED QUALITY OF LIFE AND PSYCHOLOGICAL DISTRESS IN PATIENTS WITH DIABETIC RETINOPATHY

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ABSTRACT

Background: Diabetic retinopathy is one of the major causes of impaired vision across the globe and a major complication of diabetes mellitus. It has negative impacts on day-to-day functioning, independent living and mental well-being, besides visual loss. There is growing evidence of decreased vision-related quality of life and increased psychological distress as major contributors to the total disease burden.

Objectives: To determine vision-related quality of life and psychological distress in diabetic retinopathy patients and to determine their relationship with disease severity and impaired visual levels.

Methodology:A retrospective study was carried out using 100 patients with diabetic retinopathy who were recruited using a consecutive sample in a tertiary care hospital over six months. Patients whose diagnosis was confirmed over the age of 18 years were included, and patients who had other ocular or psychiatric conditions were excluded. The quality of life related to vision was considered with the NEI-VFQ-25 questionnaire, whereas the level of psychological distress was considered with the help of the Hospital Anxiety and Depression Scale (HADS). The clinical assessment involved a visual acuity test and fundus examination to stage. SPSS version 25 was used to analyse the data, and $p < 0.05$ was taken to be statistically significant.

Results: The mean age of participants was 54.2 ± 9.6 years, with 58% males. Advanced retinopathy was observed in 60% of patients. Vision-related quality of life scores were significantly lower in advanced disease ($p < 0.001$). Psychological distress was prevalent, with 48% anxiety and 52% depression. Poor visual acuity was significantly associated with higher distress levels ($p = 0.002$). A strong negative correlation ($r = -0.61$, $p < 0.001$) was found between quality of life and psychological distress.

Conclusion: Diabetic retinopathy greatly impairs the quality of life and causes psychological distress. Ophthalmic and psychological care should be offered together to enhance patient outcomes.

Keywords: Diabetic Retinopathy, Quality of Life, Psychological Distress, Vision

Introduction

Diabetic retinopathy (DR) is considered to be one of the most common microvascular problems associated with diabetes mellitus and a significant cause of avoidable visual impairment in the world. As diabetes becomes common all over the globe and especially in developing nations, DR has become a huge health issue of concern to the people. Pathophysiology of DR consists of the damage to the retinal microvasculature caused by chronic hyperglycemia, leading to capillary leakage, retinal ischemia, and neovascularisation. DR is clinically presented as non-proliferative diabetic retinopathy (NPDR), proliferative diabetic retinopathy (PDR), and is complicated by diabetic macular oedema (DME) [1,2]. DR-induced visual impairment may have a devastating impact on everyday living, such as in reading, driving, doing professional work, and being

independent. VRQoL has become a significant patient-centred outcome, which has been used to describe the functional and emotional consequences of visual loss. There are also common instruments like the NEI-VFQ-25 questionnaire that are used to measure VRQoL, and it has been found that patients with DR have a much lower quality of life, which increases with disease severity [3,4]. In addition to visual disability, DR also corresponds to psychological distress. Anxiety, depression and social withdrawal are common effects of patients with DR because of the fear of going blind, relying on the caregivers and disability in everyday life. According to recent study, it is observed that the prevalence of psychological disorders among patients with DR is high and is commonly underdiagnosed and undertreated. In addition, the relationship is two-way, such that psychological distress can contribute to the development of diabetes-related complications, including poor glycemic control, which will intensify the disease progression [5,6].DR severity, the level of visual impairment, and the permanence of diabetes are important factors that may contribute to VRQoL and mental health outcomes. Patients with advanced DR or bilateral vision loss are characterised by significantly impaired quality of life and increased psychological load, in contrast to patients who are afflicted with the disease at an earlier stage. Modes of treatment, including laser photocoagulation and intravitreal injections of anti-VEGF drugs, are designed to conserve or enhance vision, which is not always a mirror of the objective clinical outcome. Other patients still have a poor quality of life because of the discomfort or fear of disease progression, which is associated with treatment [7,8].Due to the critical role of DR in visual and psychological well-being, it is crucial to have an in-depth grasp of the interaction between the quality of life as it applies to vision and mental distress. The evaluation of VRQoL and mental health outcomes will be essential sources of information about the comprehensive patient care and underline the necessity of combined ophthalmic and psychological treatment. This paper will compare VRQoL and psychological distress in patients with DR and discuss their relationship with disease severity, which will lead to an evidence-based approach to enhancing patient-centres care [9,10].

Study Objectives

To measure the quality of life of vision-related factors and psychological distress in diabetic retinopathy patients, and to examine the relationship with the severity of the disease, visual acuity, and demographics.

Materials and Methods

Study Design & Setting

A retrospective study conducted at Department of Ophthalmology, Bacha khan Medical College, Mardan.kpk Pakistan from june 2022 to dec 2022. six months in a tertiary care hospital ophthalmology department. Visual and psychological outcomes were assessed in all the patients who were enrolled sequentially to determine diabetic retinopathy caused by diabetes.

Participants

One hundred patients who were diagnosed with diabetic retinopathy were used. Inclusion criteria: adults over 18 years, diagnosed with DR, and able to fill out questionnaires. Exclusion: ocular co-morbidities, ocular surgery within 6 months, psychiatric illness not associated with diabetes and systemic conditions that impact sight. Informed consent was provided by all the participants in writing.

Ethical Approval Statement

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Institutional Review Board (IRB)/Ethics

Committee of the respective institution prior to the commencement of the study. Written informed consent was obtained from all participants (or their legal guardians, where applicable) before inclusion in the study. Confidentiality and anonymity of participant data were strictly maintained throughout the research process. Participants were assured of their right to withdraw from the study at any stage without any consequences.

Sample Size Calculation

The formula that was used in calculating the sample size is the cross-sectional study with prevalence estimation. Given 50% prevalence of psychological distress among patients having DR, a 95% confidence interval, and a 10% margin of error, the minimum required sample size was 96. The dropouts were explained by recruiting 100 patients.

Inclusion Criteria

Adults who were over 18 years old, who had a confirmed DR, and who could answer questionnaires.

Exclusion Criteria

Other conditions of the eye, psychiatric illnesses that are not related to diabetes, ocular surgery that has been done recently, and systemic diseases that affect the eye.

Diagnostic and Management Strategy.

Ophthalmic examination was done thoroughly on patients, including visual acuity, slit-lamp, and fundus examination. The staging of DR was made depending on the ETDRS. Laser photocoagulation or anti-VEGF injections were proposed as a clinical indication of management, glycemic control and follow-up counselling were included.

Statistical Analysis

The analysis of data was done through SPSS 25. The variables were continuous, and their values were presented in mean and standard deviation; the categorical variables were presented in percentages. The differences between groups were compared using independent t-tests and ANOVA. Pearson's coefficient was used to analyse the correlation. The p-value that was assumed significant was less than 0.05.

Ethical Approval

Results

A total of 100 patients with diabetic retinopathy were included. The mean age was 54.2 ± 9.6 years, with 58% males and 42% females. Disease severity included 40% mild-moderate NPDR and 60% severe NPDR or PDR. Mean vision-related quality of life scores were 68.7 ± 10.2 in early-stage DR and 52.3 ± 11.4 in advanced DR, with a significant difference ($p < 0.001$). Psychological distress was prevalent: 48% of patients had moderate-to-severe anxiety, and 52% exhibited depression per HADS scoring. Poor visual acuity correlated with higher distress levels ($p = 0.002$). A negative correlation between VRQoL and psychological distress was observed ($r = -0.61$, $p < 0.001$). Male and female patients had comparable VRQoL scores, but older patients (>60 years) reported slightly higher distress. Overall, disease severity and visual impairment were significant predictors of reduced quality of life and increased psychological burden.

Intervention Outcome

Laser or anti-VEGF treatment of patients demonstrated stabilisation of vision in 80 per cent of patients and a slight increase in VRQoL scores. Psychological counselling minimised anxiety and depression scores amongst 60 per cent of the participants. Combined care with the use of ophthalmic and mental health treatment was shown to be important, as it positively affected the level of functional outcome and emotional well-being.

Table 1: Demographic and Clinical Characteristics of Patients (n = 100)

Variable	Frequency (%) / Mean ± SD
Age (years)	54.2 ± 9.6
Gender	
Male	58 (58%)
Female	42 (42%)
Duration of Diabetes (years)	10.5 ± 4.2
Type of DR	
Mild-Moderate NPDR	40 (40%)
Severe NPDR / PDR	60 (60%)
Visual Acuity (LogMAR)	0.42 ± 0.18

Table 1 shows demographic and clinical characteristics of patients with diabetic retinopathy, including age, gender, duration of diabetes, DR severity, and mean visual acuity.

Table 2: Vision-Related Quality of Life (VRQoL) Scores by DR Severity

DR Severity	VRQoL Score (Mean ± SD)	p-value
Mild-Moderate NPDR	68.7 ± 10.2	
Severe NPDR / PDR	52.3 ± 11.4	<0.001

Table 2 compares mean VRQoL scores between early-stage (mild-moderate NPDR) and advanced-stage (severe NPDR/PDR) diabetic retinopathy patients, demonstrating significantly lower quality of life in advanced disease.

Table 3: Psychological Distress (Anxiety and Depression) in patients

Psychological Outcome	Frequency (%)
Anxiety (moderate-severe)	48 (48%)
Depression (moderate-severe)	52 (52%)
Anxiety (mild/none)	52 (52%)
Depression (mild/none)	48 (48%)

Table 3 presents the prevalence of moderate-to-severe anxiety and depression among patients with diabetic retinopathy, assessed using the Hospital Anxiety and Depression Scale (HADS).

Table 4: Correlation between VRQoL and Psychological Distress

Parameter	Pearson's r	p-value
VRQoL vs Anxiety Score	-0.58	<0.001
VRQoL vs Depression Score	-0.61	<0.001

Table 4 shows the negative correlation between vision-related quality of life (VRQoL) and psychological distress. Higher anxiety and depression scores are associated with lower VRQoL, indicating greater emotional burden in patients with DR.

Discussion

The current study proved that diabetic retinopathy (DR) has a strong effect on the quality of life (VRQoL) via visual impairment and psychological distress, which is largely related to anxieties and depression. These results are consistent with the most current findings that the functional burden of DR goes beyond the visual loss of acuity to include negative effects on daily lives and

emotional well-being. Our analysis demonstrated that the higher stages of DR were related to a distinctly lower level of VRQoL and an increased level of psychological distress, which correlates with international trends concerning the impact of the disease, as documented in the literature [11,12]. The recent study states that the trends of VRQoL are getting less and less positive with the progression of the severity of DR. The systematic review and meta-analysis by Zayed et al. have found that the VRQoL scores reduced proportionally to the severity of DR, and vision-threatening DR was the most likely to have the lowest VRQoL scores across the globe [13]. This deterioration could not be explained only by the variation of visual acuity, which means that DR influences not only functional and psychosocial areas but also sensory impairments. On the same note, a community-based study found that bilaterally or more severely affected subjects of DR scored lower in various VRQoL subscales, such as mental health and role difficulties, which supports our results of poor quality of life in advanced disease [14,15]. Although the relative impairment of VRQoL in DR was recorded in many older studies, our study contributes to the recent literature by incorporating psychological distress evaluation. Affective disorders like anxiety and depression are becoming very important elements of disease burden [16]. The psychosocial vulnerability of DR patients was demonstrated by a cross-sectional investigation through multiple scales, where anxiety and depression were found to be more common among DR patients than non-retinopathic diabetic controls. The other study that was carried out on diabetic patients under DR screening indicated that depressive symptoms were significantly linked to low VRQoL and high anxiety, which implies that impaired functioning of the eyes might contribute to the intensity of emotional distress [17,18]. These new findings are also consistent with our results, which indicate that VRQoL is highly negatively correlated with psychological distress. This association highlights the importance of the overall care that involves the visual functioning and psychological well-being. Other past studies had also indicated that patient-reported outcome measures such as VFQ 25 are useful in assessing this multidimensional influence of DR. Comparison with a previous Indian-based study with the same NEI VFQ 25 instrument indicated the same patterns of lower VRQoL, but that study was not centred on any psychological outcome, but more on demographic variables, such as gender and hypertension [19,20]. There is also an indication that interventions can affect VRQoL outcomes. A comparative study done in 2025 showed that various DR treatment modalities, such as anti-VEGF injections and laser therapy, can vary in terms of their effect on VRQoL scores over time, and how the clinical management approach may change the lived experiences of patients.

Limitations

The current study has limitations due to its cross-sectional nature, which cannot help in making a causal conclusion about the DR severity, quality of life, and psychological distress. One tertiary care centre was used to derive the sample, which reduced the generalizability. Self-reported surveys could lead to bias in the response, and the effects of post-treatment on VRQoL were not considered.

Conclusion

Diabetic retinopathy is a serious impairment that is marked by a decline in the quality of life relative to vision and the rise in psychological distress, especially in the late stages. Mental health check-ups and ophthalmic care have to be integrated regularly. Functional and emotional outcomes may be improved by the detection of the issue at a young age, timely intervention, and psychosocial support to increase the well-being of patients affected.

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Authors Contributions

Concept & Design of Study: Muhammad Bilal,Shafqat Ali Shah
Drafting: Hidayatullah Mahsud
Data Collection & Data Analysis: ,Muhammad Tariq
Critical Review: Manzoor ali
Final Approval of version: All Mentioned Authors Approved.

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