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RESEARCH ARTICLE

The Relationship Between Glaucoma Duration and Quality of Life Among Patients at Haji General Hospital Medan

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Introduction: Glaucoma is a leading cause of irreversible blindness globally. The progressive decline in visual function severely impacts the physical, emotional, and social dimensions of a patient's daily life. This study aims to determine the association between the duration of glaucoma and the vision-related quality of life (VRQoL) among patients treated at Haji General Hospital Medan. **Method:** An analytical observational study with a cross-sectional design was conducted on 30 glaucoma patients selected via purposive sampling. Clinical data regarding disease duration were extracted from medical records, while VRQoL was assessed using the validated National Eye Institute Visual Function Questionnaire-25 (NEI-VFQ-25). Data were analyzed using the Pearson correlation test. **Results:** The cohort consisted of 30 adults aged 40-60 years. The majority of respondents were female (53.3%) and unemployed (53.3%). A significant negative association was found between the duration of glaucoma and the composite NEI-VFQ-25 score ($r = -0.451$, $p = 0.002$). **Discussion**: There is a statistically significant, moderate inverse correlation between the duration of glaucoma and patients' quality of life. Longer disease duration is associated with a progressive decline in VRQoL, emphasizing the need for early detection and comprehensive, multidisciplinary management.

Keywords: Glaucoma duration, NEI-VFQ-25, Quality of life, Vision impairment.

INTRODUCTION

Glaucoma is a chronic, progressive optic neuropathy characterized by the irreversible degeneration of retinal ganglion cells and optic nerve head cupping, frequently driven by elevated intraocular pressure (IOP). As a leading cause of global blindness, glaucoma places a profound burden on healthcare systems and individual patients. Primary open-angle glaucoma (POAG), the most prevalent variant, subtly

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but continuously erodes peripheral visual fields before encroaching on central vision, significantly impairing daily activities such as reading, driving, and spatial navigation. [1, 2]

Approximately 70 million people worldwide suffer from glaucoma, one of the second leading causes of blindness both in the United States and around the world. Of the 70 million glaucoma patients worldwide, 74% have open-angle glaucoma and in the United States, nearly 80% of all glaucoma is *OAG (open angle glaucoma).* [3]

Primary open-angle glaucoma (POAG) is the most common form of glaucoma and can affect a patient's quality of life through a significant impact on daily vision functions such as reading, walking, or driving. In addition, treatments that require topical treatment and surgical intervention can also affect the patient's quality of life.[4]

The impact of glaucoma on a patient's quality of life involves not only physical but also psychological, social, and environmental aspects. The decline in vision function resulting from glaucoma can reduce the patient's adaptability to changes in bodily functions and disease limitations, which ultimately decreases the patient's quality of life.[5]

Decreased visual function, the cause of glaucoma, which cannot adapt to changes in body functions and the limitations of the disease experienced, can result in an individual's perception of their quality of life. A person's quality of life describes the individual's prosperity and ability to achieve it at the next stage of life. Quality of life is self-reflection which is prosperity and the ability to live a happy life. Quality of life consists of physical ability, general health, employment, social factors and independence.[6]

As a result of the research that has been started by Park, glaucoma patients produce low quality of life and activity daily living (ADL) scores. It was found that 32 (8.0%) glaucoma patients in Africa experienced a quality of life disorder based on a survey of the results of the NEI VFQ National Eye Institute Visual Function Questionnaire.[7] Against this background, this study focuses on analyzing the quality of life of glaucoma patients at Haji General Hospital Medan.

The clinical management of glaucoma requiring strict adherence to topical pharmacotherapy, laser interventions, or surgical trabeculectomy compounds the psychological and financial burden on patients. Consequently, the impact of glaucoma extends far beyond structural visual loss, deeply affecting the physical, emotional, and social dimensions of a patient's well-being. Evaluating Vision-Related Quality of Life (VRQoL) utilizing standardized instruments, such as the National Eye Institute Visual Functioning Questionnaire (NEI-VFQ-25), has become essential for capturing the true functional impact of the disease. While previous

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literature establishes that severe visual field defects correlate with poor VRQoL, localized data assessing the specific impact of disease chronicity (duration) on patients in North Sumatra remains scarce. Therefore, this study aims to investigate the association between the duration of glaucoma and the quality of life among patients at Haji General Hospital Medan.

This study is expected to provide further insight into the relationship between patients' demographic characteristics and their quality of life, as well as help in the development of more effective treatment strategies to improve patient well-being. thus making researchers interested in researching about, "The relationship between the length of time suffering from glaucoma and the quality of life of glaucoma patients at Haji Medan General Hospital".

METHOD

An analytical observational study utilizing a cross-sectional design was conducted at the ophthalmology outpatient clinic of Haji General Hospital Medan.

The study population consisted of confirmed glaucoma patients. A sample size of 30 respondents was obtained using purposive sampling based on specific clinical parameters. The inclusion criteria required patients to be aged 40–60 years, possess a confirmed diagnosis of glaucoma for a minimum of one year, and demonstrate cooperative cognitive ability to complete a questionnaire. Patients who refused informed consent were excluded

Data collection utilized a mixed approach. Demographic data and the primary independent variable (duration of glaucoma diagnosis) were extracted directly from secondary hospital medical records. The dependent variable, Vision-Related Quality of Life (VRQoL), was assessed using the Indonesian-validated version of the National Eye Institute Visual Functioning Questionnaire-25 (NEI-VFQ-25). To mitigate literacy bias, the questionnaire was interviewer-administered.

This research protocol was reviewed and approved by the Health Research Ethics Committee of 1162/KEPK/FKUMSU/2024. Written informed consent was obtained from all participants prior to data collection.

Statistical analysis was performed using SPSS software. Normality of the NEI-VFQ-25 composite scores and duration data was assessed using the Shapiro-Wilk test ($n < 50$). Because the data met the assumption of normality, the parametric Pearson correlation test was utilized to determine the strength and direction of the association between glaucoma duration and VRQoL scores. Significance was set at $p < 0.05$.

RESULT

Table 1. Sample Demographic

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Characteristics	Frequency (n)	Percentage (%)
Age Group		
Middle-Aged Adults (40–50 years)	0	0
Older Adults (51–60 years)	30	100
Education Level		
Basic Education	6	20
Secondary Education	19	63.3
Higher Education	5	16.7
Occupation		
Unemployed / Housewife	16	53.3
Self-employed	5	16.7
Civil Servant	5	16.7
Farmer	4	13.3
Glaucoma Duration		
1 – 5 years	29	96.7
> 5 years	1	3.3
Gender		
Female	16	53.3
Male	14	46.7

Based on the table above, The demographic profile of the 30 respondents demonstrates that all participants fell into the older adult category (51–60 years, 100%). The cohort was predominantly female (n=16, 53.3%). Regarding occupational status, the majority of the sample was unemployed or identifying as housewives, accounting for 16 individuals (53.3%). Clinical records indicated that almost all respondents (n=29, 96.7%) had a glaucoma duration of 1 to 5 years.

Table 2. Analytical Test Results

Variable	Mean ± SD	*P*	*Pearson*
General Health	30 ± 15.2		
General Vision	45.3 ± 14.7		
Eye Pain	40.8 ± 13.9		
Social Function	48.3 ± 14.5		
Mental Health	42.5 ± 18.7		
Role distress	49.1 ± 13.9		
Dependency	40.8 ± 17.9	.002	-.451
Driving	36.6 ± 24.3		
Color Vision	64.1 ± 19.3		
Peripheral Vision	58.3 ± 21.1		
Remote Vision	37.5 ± 15.7		
Near Vision	44.1 ± 18.1		
Glaucoma duration	4.01 ± 4.15		

Based on the table above, the results of the analytical test were obtained *at p* <0.05, so it was proven that there was a long-term relationship between suffering from

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glaucoma and the quality of life of glaucoma patients.

The results of *Pearson's analysis* were -0.451 where the correlation was stated to be reversed and the correlation level was moderate.

DISCUSSION

The results of this study demonstrate a statistically significant, moderate inverse correlation (r = -0.451, p = 0.002) between the duration of glaucoma and patients' Vision-Related Quality of Life (VRQoL). This indicates that as the chronicity of the disease increases, patients experience a progressive deterioration in their quality of life. Glaucoma is not merely a structural ocular pathology; it imposes a severe, compounding chronic disease burden. The progressive loss of visual fields directly impairs functional independence, limiting patients' ability to perform basic daily activities such as reading, driving, and safe ambulation without the risk of falls.

The demographic profile of this cohort further contextualizes this decline. The entirety of the sample fell into the older adult category, a demographic already vulnerable to systemic comorbidities and age-related physiological decline. Furthermore, the majority of respondents were unemployed or housewives. The intersection of chronic visual impairment with lower socioeconomic or occupational status often exacerbates the psychological burden of the disease. Patients with a longer duration of glaucoma must constantly adapt to diminishing visual capability while simultaneously managing the financial and emotional stress of lifelong, rigorous adherence to topical therapies or clinical monitoring.

The NEI-VFQ-25 instrument captures these multidimensional impacts, reflecting not only the physical deficit but also the psychological adaptation failure. The moderate negative correlation observed in this study aligns with broader ophthalmic literature, confirming that while early-stage glaucoma might be asymptomatic, the cumulative structural damage over years translates directly into profound psychosocial and functional deficits.

Glaucoma can occur in all ages. However, generally people with glaucoma often occur in the elderly because they begin to experience an increased prevalence of risk after the age of 40 to the age of 60 years and above. The elderly are usually at risk of increasing the prevalence of glaucoma than people aged 40 years and below due to decreased function of organs, blood vessels and nerves of the eye which also experience decreased function due to aging. Elderly patients are more prone to developing some diseases, namely hypertension and diabetes mellitus. From these two diseases, a poor prognosis was obtained in the blood vessels in the eye area which caused damage to the optic nerve to the appearance of glaucoma in the elderly. The risk factors that can be estimated in glaucoma are gender, age,

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myopia, hypermetropia, and a positive family history of glaucoma. Other factors such as diabetes mellitus, hypertension, a history of eye injury, and a history of taking steroids or antidepressants can be estimated as one of the risk factors for glaucoma. [8]

Primary glaucoma indicates optic neuropathy with the presence or absence of an increase *in TIO (intra ocular pressure)* whereas "secondary" glaucoma is determined by a known pathological mechanism that increases *TIO (intra ocular pressure)* above normal. Both types of the disease have in common anterior eye dysfunction, symptoms of *loss of RGC (retinal ganglion cell)* and optic neuropathy) and treatment (*decrease in intra-ocular pressure TIO*).[9]

Measure *(QoL) of quality of life* may assess the most important overall effects of treatment for patients because they capture how their life experiences are affected by the intervention. Outcomes including the impact on daily functioning, mobility, emotional well-being, and social activities are of primary concern for people treated for glaucoma, measurement *(QoL) Quality of life* can be achieved using NEI-VFQ-25 *(National Eye Institute Visual Functioning Quesionnaire)* is a measuring tool whose results are valid and reliable in measuring quality of life. [10]

The NEI-VFQ-25 enables the systematic collection of data related to (*QoL) Quality of life* and can help monitor health conditions by assessing changes over time. Eye diseases and their treatment can adversely affect many aspects of a patient's health including systemic side effects, psychological, social, and emotional impacts. The NEI-VFQ-25 questionnaire has been used in the assessment of quality of life of glaucoma patients in a multicenter study with a large population. This questionnaire also has the advantage of evaluating psychological aspects, which are not studied in other glaucoma-specific questionnaires.[4] The reason I took the title is because there have not been many people who have researched the quality of life of glaucoma patients in the city of Medan, and moreover I am very interested in this topic because I think glaucoma is a disease that can affect a person's quality of life such as from physical, social, and environmental dimensions. [11]

The main diagnosis in glaucoma is a funduscopy examination of the optic disc and the retinal nerve fiber layer. Glaucoma is a multifactorial optic neuropathy usually characterized by progressive structural loss *of retinal ganglion cells* (RGC) and loss of vision. Early diagnosis of intraocular pressure is currently the only modifiable risk factor for the occurrence and development of glaucoma. The thickness and curvature of the cornea must be measured at the same time to determine the possibility of high or low intraocular pressure measurements, one of which is by the pakimetry method. [12]

Pharmacotherapy for glaucoma has significantly evolved over the past few decades with the introduction of topical *carbonic anhydrase inhibitors (CAIs),* beta

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blockers, prostaglandin analogues, and alpha agonists. These drugs have greater effectiveness and a more favorable safety profile than older topical (pilocarpine) and systemic (oral CAI) treatments. [13]

Systemic hyperosmotic groups such as isorbid, mannitol, glycerin are used to be able to control *TIO (intraocular pressure)* in acute glaucoma. The mechanism of action is by increasing the pressure on the osmotic plasma with an intraocular structure so that an osmotic gradient occurs. [14]

Trabeculectomy can result in outstanding control of TIO, especially TIO *(intra ocular pressure)* in adolescents low targeted to slow the progression of glaucoma. Selective laser trabeculoplasty has largely replaced argon laser trabeculoplasty due to its favorable safety profile, comparable intra-ocular pressure TIO lowering efficacy, and ability for repetitive treatment applications. [15]

Complications of glaucoma include blindness, especially progressive glaucoma that cannot be cured, must receive treatment and monitoring regularly. And this condition can affect the quality of life in glaucoma patients because it can interfere with work, difficulty walking, and fall or be seriously injured during activities because it greatly affects the perspective in life. [16]

This study revealed a significant relationship between the length of time suffering from glaucoma and the quality of life of patients at Haji Medan Hospital. Of the 30 respondents surveyed, all were elderly, the majority of whom were women, with secondary education and worked as housewives. These findings point to several demographic factors that affect the quality of life of glaucoma patients. The majority of respondents are elderly, which is in line with national data in Indonesia where glaucoma is predominantly found in the age group of 44-64 years and over 64 years old. Decreased organ function that occurs in old age, including optic nerve degeneration due to increased intraocular pressure, contributes to a decrease in the quality of life of glaucoma patients.[17]

The finding that the majority of respondents are women supports data from the Ministry of Health of the Republic of Indonesia which shows that the prevalence of glaucoma is higher in women than in men. Anatomical factors, such as smaller eye sizes in women, are thought to play a role in a higher risk of developing glaucoma.[18]

Most of the respondents had a high level of education, and the majority worked as housewives. Low levels of education can affect a patient's understanding of glaucoma, resulting in a lack of early detection and appropriate treatment. In addition, respondents who are not employed tend to have less access to information and knowledge about glaucoma, which also affects their quality of life. The results of the analytical test showed a p<value of 0.05 with a Pearson correlation coefficient of -0.451, which showed a negative correlation with moderate strength. This means that the longer

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a person suffers from glaucoma, the lower their quality of life. However, this relationship is not always linear, as other factors such as age, gender, and socioeconomic status can also affect a patient's quality of life. This study emphasizes the importance of early detection and ongoing interventions to minimize the negative impact of glaucoma on quality of life. Patients with a longer duration of glaucoma and advanced stages of the disease tend to have a lower quality of life, so a multidisciplinary approach is needed in the management of this disease.[19,20]

Several methodological limitations must be acknowledged. First, the sample size of 30 respondents is relatively small, which reduces the statistical power and external validity of the findings, limiting broad generalizability. Second, the cross-sectional design fundamentally precludes the establishment of temporal causality; it only confirms an association between disease duration and VRQoL. Finally, while the NEI-VFQ-25 composite score was utilized to assess overall quality of life, a granular analysis of individual sub-domains (e.g., peripheral vision, mental health, dependency) was not conducted, which could have provided deeper insights into specific functional deficits. Future longitudinal studies with larger, multicenter cohorts are required to map the exact trajectory of VRQoL decline over time

CONCLUSION

This study establishes a statistically significant, moderate inverse association between the duration of glaucoma and Vision-Related Quality of Life among older adult patients at Haji General Hospital Medan. A longer duration of the disease correlates with a measurable decline in patients' functional and psychosocial well-being. These findings underscore the critical necessity for early clinical detection and the implementation of comprehensive, multidisciplinary management strategies that address not only the intraocular pressure but also the psychological and functional rehabilitation of the patient.

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