

## Research Article

# The Four Elements in Low-Vision Rehabilitation Service

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### Abstract

This article addresses the critical issue of low-vision rehabilitation (LVR) services, focusing on the challenges faced by visually impaired patients, particularly those with central visual field limitations and visual acuity of 3/60 or worse in the better eye. Glaucoma, a chronic progressive optic neuropathy, poses a significant threat to vision and quality of life. Despite the absence of a definitive cure, various treatment modalities aim to control and slow down its progression. However, the impact of glaucoma-related structural and functional vision loss on patients' quality of life is profound. Visual rehabilitation plays a pivotal role in guiding patient-centered therapeutic decisions, yet it remains underutilized for glaucoma patients. Understanding the available LVR is crucial in developing new tools and approaches. This article provides an overview of LVR options for visually impaired individuals and emphasizes the importance of comprehensively assessing and addressing their needs, both in terms of visual function and overall well-being.

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**Keywords:** low-vision rehabilitation, glaucoma, visual impairment, vision-related quality of life, medical management

## 1. Introduction

Glaucoma is a chronic progressive optic neuropathy that is characterized by the damages that occur at the retinal ganglion cells and retinal nerve fiber layers [1,2]. On retinal fundus examination, above mentioned optic nerve damage changes are visualized as abnormal optic nerve head appearances. Clinically, the diagnosis of glaucoma is done by assessing structural changes with characteristic manifestations of functional visual field defects [3].

Glaucoma blindness is one of the leading irreversible blindness in the world. The global population of glaucoma sufferers aged 40–80 years has increased from 64.3 million to 76.0 million in 2020 and the figure is predicted to reach 111.8 million in 2040 due to an increase in the ageing population [4–6]. In 2002, the World Health Organization (WHO) has estimated, based on slightly different data, that there were 4.5 million cases of blindness resulting from primary glaucoma [5]. Quigley and Broman

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estimated in 2020 that 79.6 million people will have open-angle glaucoma (OAG) or angle-closure glaucoma (ACG) and that the number of bilateral blindness cases resulting from each, respectively, will rise to 5.9 and 5.3 million [4].

Glaucoma is an eyesight-threatening disease and unfortunately, there is no definitive cure but all the available treatment modalities are aimed to control and slow down the glaucoma progression [7,8]. The urgency and attention to reduce the prevalence of vision loss caused by glaucoma is paramount important. However, equally important attention and urgency are needed for those who are blind due to glaucoma.

Several published articles have reported that glaucomatous structural and functional vision loss can decrease the vision-related quality of life (QoL) [9,10]. Glaucomatous eyesight deteriorates patients' struggle to perform vision-dependent mobility, reading, perform household chores, and basic daily living activities, even it is obvious in the early stage of the disease. Progression of glaucomatous changes and severity of vision impairment were reported to affect the significance of the patient's QoL [11]. Visual rehabilitation is an important part of guiding the patient-centered therapeutic decisions. Visual rehabilitation services are important but these resources were under-utilized for patients with glaucoma [11–13].

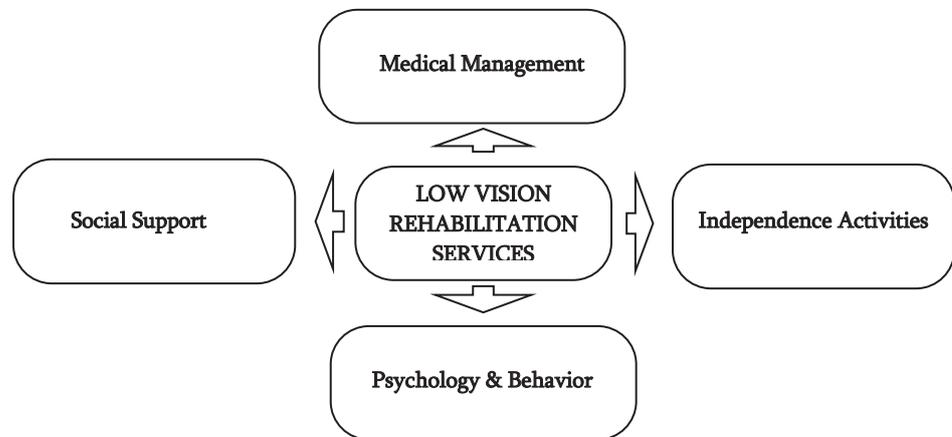
Before the development of potential new modules or tools or any kind of low-vision aid, understanding the available low-vision rehabilitation (LVR) is crucial [14]. This article provides an overview of the LVR that has been used in management as low low-vision apparatus for visually impaired patients. Visual impairment discussed in this study are those patients who present with visual acuity 3/60 or worse with central visual field of 10° or less in better eye [15].

## 2. Low-vision Rehabilitation

LVR is a valuable vision rehabilitation for those patients coping with vision loss conditions, especially when medical or surgical interventions are either contraindicated or unsuccessful. Visual rehabilitation has a potential and significant role in improving the patient's well-being and QoL [16]. However, almost 80% of the patients with vision impairment were not evaluated and assessed comprehensively [17].

Low-vision rehabilitation service (LVRS), aims to assess and determine functional difficulties and proceed with relevant education about strategies that can be used effectively and increase patient's independency with their remaining residual vision. In

LVRs, apart from medical issues other components such as mental well-being, psycho-behavioral and people living around the patient as social support are included in this comprehensive assessment.



**Figure 1:** Summary of low vision assessment.

### 3. Low-vision Rehabilitation Services

#### 3.1. Medical management

Identifying the underlying ocular and systemic condition is the key factor in low vision while the current symptoms and stability of the disease transcript the progression and severity of low vision [14,18]. Stabilizing the underlying disease from progressing and further worsening of low vision is a mandatory management. Hence, qualitative and quantitative ocular functional assessment and its impact on patient's vision is the predicting factor for an appropriate and timely referral of low-vision patients for LVR services by healthcare professionals [19].

#### 3.2. Independence activities

Independence activity assessment is a difficult assessment faced by low-vision patients on performing selected activity goal achievement [20,21]. Knowing the difficulties and remaining residual functional vision, appropriate rehabilitation services are rendered to low- vision patients so that they can maximize independence in achieving at least goals of daily living activities [14].

### 3.3. Psychological and behavior

The limitation of physical functions negatively influences the psychological and behavioral functions of low-vision patients. Establishing counseling and mental health services on a regular basis can promote patient wellness. Expert involvement in low-vision patient's cognitive functions assessment and management through patient education can transform a patient's life into healthy living [22].

### 3.4. Social support

Social support is a final and important puzzle in overall success of LVRS among low-vision patients. Firm social support by family members and society can provide an effective method for patients who suffer from low vision or loss of vision. Patients with visual impairment continuously getting support from families and friends demonstrated lesser incidence of depression, greater life satisfaction, and better adaptation to vision impairment [13,23].

## 4. Conclusion

Clear guidelines or recommendation on how to assess and evaluate low vision or which LVA is suitable for low-vision patients is not very clear. However, combining the best-suited LVA to LV patients, can improve their QoL to a greater extent.

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