

## Original Research Article



# Occupational Impact of Low Vision in Working-Age Adults: A Cross-sectional Study

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**Abstract: Background:** Low vision, a significant visual impairment uncorrectable by standard methods, profoundly impacts daily activities, employment, and quality of life. Increasing global prevalence, driven by aging populations and chronic health conditions, highlights the urgent need for targeted interventions. Employment challenges, transportation barriers, employer biases, and psychological consequences exacerbate the issue. Addressing these multifaceted challenges requires comprehensive strategies to improve occupational participation and overall well-being among individuals with low vision. **Objectives:** Evaluate the occupational impact, employment challenges, and quality of life among working-age adults with low vision. **Methods:** This cross-sectional study was conducted at the Ophthalmology Department of Shaheed Tajuddin Ahmed Medical College from June 2021 to May 2022, involving 164 participants aged 18–60 years with low vision. Data were collected using structured questionnaires and clinical examinations, including visual acuity assessments. Statistical analysis was performed using SPSS version 25.0, with p-values  $\leq 0.05$  considered significant. Ethical approval and informed consent were obtained. **Result:** The study included 164 participants with a mean age of  $42.5 \pm 10.8$  years. Males comprised 57.9% (n=95) and females 42.1% (n=69). Office workers made up 30.5% (n=50), and 24.4% (n=40) were unemployed. Moderate low vision was most common (39.6%, n=65). Central vision loss affected 42.7% (n=70). Difficulty in task performance was reported by 61% (n=100), while 67.1% (n=110) experienced reduced work efficiency. Anxiety affected 51.8% (n=85). **Conclusion:** Low vision significantly impacts employment, productivity, and mental health, with assistive devices and support systems playing vital roles in mitigation.

**Keywords:** Low Vision, Visual Impairment, Occupational Barriers, Employment Challenges, Productivity Loss.

## Introduction

Low vision, defined as a significant visual impairment that cannot be fully corrected with standard glasses, contact lenses, medication, or surgery, poses substantial challenges to individuals within the working-age population<sup>1</sup>. This condition

often leads to difficulties in performing daily tasks, reduced quality of life, and notably, diminished employment opportunities<sup>2</sup>. The prevalence of low vision is increasing globally, correlating with aging populations and the rising incidence of chronic health conditions such as diabetes and

hypertension<sup>3</sup>. The impact of low vision on employment is profound<sup>4</sup>. Studies have demonstrated that individuals with visual impairments experience higher unemployment rates compared to their sighted counterparts<sup>5</sup>. For instance, a study analyzing data from the Behavioral Risk Factor Surveillance System found that approximately half of individuals with blindness or low vision in the U.S. are not in the labor force, highlighting significant employment disparities<sup>6</sup>. Furthermore, research indicates that visual impairment is associated with higher odds of not working, particularly among Americans younger than 55 years<sup>7</sup>.

Several factors contribute to the employment challenges faced by individuals with low vision<sup>8</sup>. Transportation barriers are frequently cited; a survey revealed that 38% of individuals with blindness or low vision had declined job opportunities due to transportation concerns<sup>9</sup>. Additionally, misconceptions and lack of awareness among employers regarding the capabilities of visually impaired individuals further exacerbate employment difficulties<sup>10</sup>. A survey of hiring managers indicated that almost half believed there were few jobs within their company that blind or low vision workers could perform, reflecting pervasive biases<sup>11</sup>. The psychological impact of unemployment or underemployment among individuals with low vision is also significant<sup>12</sup>. Employment is closely linked to self-esteem, social integration, and overall mental health<sup>13</sup>. Consequently, the inability to secure or maintain employment can lead to increased rates of depression and decreased life satisfaction within this population<sup>14</sup>. Addressing these challenges requires a multifaceted approach<sup>15</sup>. To evaluate the occupational impact of low vision among working-age adults and identify the factors contributing to employment challenges, productivity loss, and overall quality of life in this population.

## Method and Materials

### Study Design

This cross-sectional observational study was conducted at the Ophthalmology Department of Shaheed Tajuddin Ahmed Medical College over a period of 12 months, from June 2021 to May 2022. The study aimed to evaluate the occupational impact of low vision among working-age adults. A

total of 164 participants aged between 18 and 60 years, diagnosed with low vision, were included in the study.

### Data Collection Procedure

Data was collected using a structured questionnaire and clinical examination. Participants were recruited from the outpatient department after fulfilling the inclusion criteria and providing written informed consent. Demographic details, occupational history, visual acuity levels, use of assistive devices, and psychological impact were recorded. Ophthalmic assessments, including visual acuity testing using Snellen or LogMAR charts and functional vision assessments, were performed. The collected data were systematically documented in pre-designed data sheets, ensuring accuracy and confidentiality.

### Inclusion Criteria

Adults aged 18 to 60 years diagnosed with low vision as per WHO criteria.

Individuals actively engaged in occupational activities (formal or informal).

Participants who provided informed written consent.

### Exclusion Criteria

Individuals with severe cognitive or psychological impairments affecting communication.

Patients with other ocular diseases unrelated to low vision.

Participants who refused consent or were unable to complete the assessment process.

### Statistical Analysis

Data were entered and analyzed using SPSS version 25.0. Descriptive statistics, including mean, standard deviation, frequency, and percentage, were used to summarize the data. Associations between demographic, clinical, and occupational variables were analyzed using Chi-square tests and other appropriate statistical methods. A p-value  $\leq 0.05$  was considered statistically significant. Results were presented in tables and figures for clarity.

### Ethical Consideration

Ethical approval was obtained from the Ethics Committee of Shaheed Tajuddin Ahmed Medical College before commencing the study. Written informed consent was collected from all

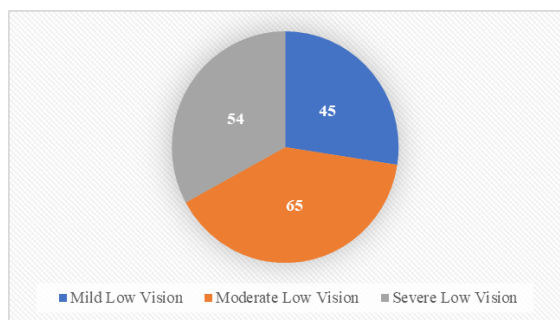
participants after explaining the study's purpose, procedures, and potential risks. Participant confidentiality and anonymity were strictly maintained throughout the study, and they were informed of their right to withdraw at any stage without repercussions.

### Result

**Table 1: Demographic data for the study population. (n=164)**

Variable	Frequency (n)	Percentage (%)
<b>Age Group (years)</b>		
18–30	35	21.3
31–40	42	25.6
41–50	47	28.7
51–60	40	24.4
<b>Gender</b>		
Male	95	57.9
Female	69	42.1
<b>Mean Age (±SD)</b>	42.5 ± 10.8	
<b>Occupation</b>		
Office Worker	50	30.5
Manual Laborer	40	24.4
Self-Employed	34	20.7
Unemployed	40	24.4

Table 1 presents the demographic distribution of the study population of 164 participants. The majority of participants fall within the 41–50 years age group (28.7%, n=47), followed by the 31–40 years group (25.6%, n=42). The mean age of the participants is 42.5 ± 10.8 years. Gender distribution reveals that 57.9% (n=95) of participants are male, while 42.1% (n=69) are female. Regarding occupations, 30.5% (n=50) are office workers, 24.4% (n=40) are manual laborers, 20.7% (n=34) are self-employed, and 24.4% (n=40) are unemployed.



**Figure 1: Visual Acuity Levels Among Participants**

Figure 1 categorizes participants based on their level of visual acuity. The largest group comprises individuals with moderate low vision (39.6%, n=65), followed by severe low vision (32.9%, n=54), and mild low vision (27.4%, n=45).

**Table 2: Type and Duration of Low Vision**

Type of Low Vision	Frequency (n)	Percentage (%)
Central Vision Loss	70	42.7
Peripheral Vision Loss	50	30.5
Mixed Vision Loss	44	26.8
<b>Duration of Vision Loss (years)</b>		
<1 year	20	12.2
1–5 years	60	36.6
>5 years	84	51.2

Table 2 classify participants based on the type and duration of low vision. Central vision loss is the most common type, affecting 42.7% (n=70) of participants, followed by peripheral vision loss (30.5%, n=50) and mixed vision loss (26.8%, n=44). Regarding the duration of vision loss, 51.2% (n=84) have been living with low vision for over 5 years, while 36.6% (n=60) reported a duration of 1–5 years. A smaller proportion (12.2%, n=20) have experienced low vision for less than a year.

**Table 3: Occupational Challenges Faced by Participants.**

Occupational Challenge	Frequency (n)	Percentage (%)
Difficulty in Task Performance	100	61.0
Mobility Issues	80	48.8
Job Retention Problems	70	42.7
Reduced Work Hours	60	36.6

Table 3 highlights the key occupational challenges faced by participants due to low vision. The most frequently reported challenge is difficulty in task performance (61%, n=100), followed by mobility issues (48.8%, n=80) and job retention problems

(42.7%, n=70). Additionally, 36.6% (n=60) of participants reported reduced work hours as a significant challenge.

**Table 4: Assistive Devices and Their Usage Frequency**

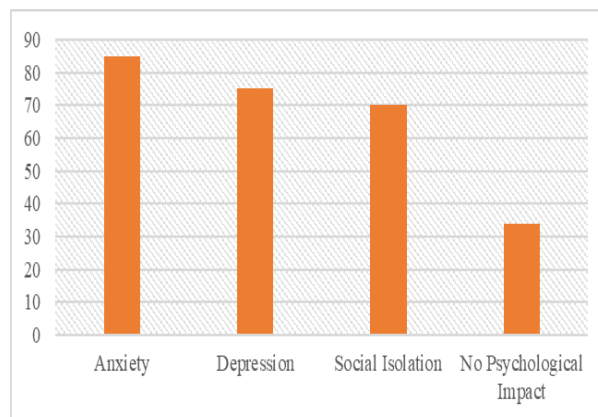
Assistive Device	Frequency (n)	Percentage (%)
Magnifiers	60	36.6
Screen Readers	50	30.5
Special Eyewear	40	24.4
No Assistive Device	14	8.5

Table 4 focuses on the assistive devices used by participants to manage their low vision. The most commonly used device is magnifiers (36.6%, n=60), followed by screen readers (30.5%, n=50) and special eyewear (24.4%, n=40). However, 8.5% (n=14) of participants reported not using any assistive devices.

**Table 5: Impact on Work Productivity**

Work Productivity Impact	Frequency (n)	Percentage (%)
Absenteeism	90	54.9
Reduced Work Efficiency	110	67.1
Increased Fatigue	95	57.9
No Impact	20	12.2

Table 5 outlines the impact of low vision on participants' work productivity. The most commonly reported issue is reduced work efficiency (67.1%, n=110), followed by absenteeism (54.9%, n=90) and increased fatigue (57.9%, n=95). A smaller proportion (12.2%, n=20) reported no impact on their work productivity.



**Figure 2: Psychological and Emotional Impact Related to Low Vision**

Figure 2 explores the emotional and psychological impacts of low vision. Anxiety is the most frequently reported issue, affecting 51.8% (n=85) of participants, followed by depression (45.7%, n=75) and social isolation (42.7%, n=70). However, 20.7% (n=34) reported no psychological impact.

**Table 6: Coping Strategies and Support Systems**

Coping Strategy/Support System	Frequency (n)	Percentage (%)
Workplace Accommodations	90	54.9
Family Support	110	67.1
Counseling Services	55	33.5
No Support Received	25	15.2

Table 6 highlights the coping strategies and support systems adopted by participants. Family support is the most common coping mechanism, reported by 67.1% (n=110) of participants, followed by workplace accommodations (54.9%, n=90) and counseling services (33.5%, n=55). However, 15.2% (n=25) reported receiving no support.

### Discussion

The current study aimed to evaluate the occupational impact of low vision among working-age adults and explored demographic characteristics, occupational challenges, assistive device use, psychological impacts, and coping mechanisms in this population. The findings revealed that the majority of participants were aged 41–50 years (28.7%), with a mean age of 42.5 ± 10.8 years. Males (57.9%) outnumbered females in the



study population, and a significant portion were office workers (30.5%) or manual laborers (24.4%). These findings align with a study conducted in India, where a higher prevalence of low vision was observed among middle-aged working males involved in physically demanding jobs, highlighting the occupational vulnerability of this demographic group<sup>16</sup>. In terms of visual acuity, moderate low vision (39.6%) was the most prevalent category, followed by severe low vision (32.9%). A similar study conducted in Nigeria also reported a higher proportion of participants with moderate to severe visual impairment, suggesting that this category significantly impacts occupational functioning and productivity<sup>17</sup>. When classifying participants based on the type and duration of low vision, central vision loss (42.7%) was the most common, followed by peripheral vision loss (30.5%). Over 51.2% of participants reported living with low vision for over five years. These findings mirror observations from a study in Brazil, where central vision loss was identified as the primary cause of occupational disability, predominantly affecting individuals aged 40–50 years<sup>18</sup>.

Occupational challenges were evident, with 61% of participants reporting difficulty in task performance, followed by mobility issues (48.8%) and job retention problems (42.7%). A similar study in South Korea found that difficulty in performing routine tasks and maintaining job retention were the primary obstacles faced by individuals with low vision in occupational environments<sup>19</sup>. Regarding assistive devices, 36.6% of participants reported using magnifiers, while 30.5% used screen readers. Alarming, 8.5% did not use any assistive devices. This finding resonates with research from Canada, where limited access to assistive technology was identified as a major barrier to enhancing productivity among visually impaired workers<sup>20</sup>. Low vision significantly affected work productivity, with 67.1% of participants reporting reduced work efficiency, and 54.9% reporting absenteeism. A study in Germany similarly documented reduced productivity and increased absenteeism among employees with low vision, leading to economic burdens both on individuals and employers<sup>21</sup>.

The psychological impact of low vision was profound, with 51.8% experiencing anxiety, 45.7% reporting depression, and 42.7% suffering from social isolation. These psychological outcomes are consistent with findings from a study conducted in Australia, where high rates of anxiety and depression were observed among visually impaired individuals due to occupational stress and limited social interaction<sup>22</sup>. Coping strategies highlighted the importance of family support (67.1%), workplace accommodations (54.9%), and counseling services (33.5%). However, 15.2% reported receiving no support, emphasizing the need for robust rehabilitation programs. A study in the United States similarly reported that family support and workplace accommodations played a crucial role in mitigating occupational challenges faced by visually impaired individuals<sup>23</sup>.

## Conclusion

This study highlights the significant occupational, psychological, and social challenges faced by individuals with low vision. The findings reveal that low vision impacts employment opportunities, productivity, and emotional well-being, with reduced work efficiency, task performance difficulties, and anxiety being the most commonly reported issues. Assistive devices, family support, and workplace accommodations play a crucial role in mitigating these challenges. A comprehensive, multi-sectoral approach is essential to improve employment outcomes and overall quality of life for individuals with low vision. The study was conducted in a single medical institution, which may limit the generalizability of the findings to broader populations. Self-reported data on occupational and psychological challenges could be subject to recall bias or underreporting.

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