



Original Article

Frequency of Visual Impairment in Idiopathic Intracranial Hypertension

Ghulam Murtaza,¹ Safia Bano,² Muhammad Husnain,² Muhammad Hasnat,² Athar Javed³

¹GMC/DHQ Teaching Hospital, Gujranwala, ²Department of Neurology, Mayo Hospital, Lahore,

³Professor of Neurology, National Hospital and Medical Center, Lahore

Abstract

Objective: To determine the frequency of visual impairment in Idiopathic Intracranial Hypertension (IIH)

Methods: A descriptive Cross-Sectional study was undertaken at the Department of Neurology, Mayo Hospital, Lahore, Pakistan from June 2023 to November 2023. After attaining IRB approval and informed consent from the patients, eligibility criteria were met and 129 patients were included in the study. A pre-designed form was used to document their clinical history and demographic information. Visual impairment was defined as the presence of any of the following: (a) blurring of vision, (b) diplopia, (c) reduced vision, or (d) compromised color vision.

Results: The mean age of the patients was 32.98 ± 9.62 years. Out of the total, 32 patients (24.81%) were male, while 97 (75.19%) were female. There was decreased vision in 84 (65.1%) patients, diplopia in 64 (49.6%) patients, impaired color vision in 98 (76%) patients, and blurred vision was noted in 77 (59.7%) patients. The data analysis found no evidence linking obesity to a higher occurrence of visual impairment. Furthermore, no correlation between gender and the frequency of visual impairment was observed.

Conclusion: Impaired color vision was the most prevalent visual impairment, occurring in 76% of the individuals, followed by decreased vision, blurring of vision and diplopia in order of occurrence in patients with IIH.

Keywords: Visual Impairment. Idiopathic Intracranial Hypertension (IIH).

How to cite this:

Murtaza G, Bano S, Husnain M, Hasnat M, Javed A. Frequency of visual impairment in idiopathic intracranial hypertension. . J Pak Soc Intern Med. 2025;6(2): 119-122

Corresponding Author: Dr. Safia Bano

Email: safiabano207@gmail.com

Received: 10-05-2024

Revised: 15-01-2025

Accepted: 25-04-2025

DOI: <https://doi.org/10.70302/jpsim.v6i2.2523>

Introduction

Idiopathic intracranial hypertension (IIH) is a complex multifactorial neuro-ophthalmic condition defined by heightened intracranial pressure (ICP) without a clear underlying cause, such as a brain tumor or any other central nervous system disorder.¹ Limited epidemiological studies on IIH have yielded relatively consistent data regarding its incidence, estimating it to be around 1-3 cases per 100,000 individuals annually.² IIH is notably more prevalent in women, particularly among obese women of childbearing age, with an incidence reported to be as high as 21 cases per 100,000 individuals annually. Additionally, this condition can also manifest in children, where there is no apparent gender bias, and the reported incidence ranges from 0.4 to 2.2 cases

per 100,000 individuals annually.³ Although headaches are a major source of morbidity, visual impairment remains the primary concern in IIH. However, data regarding the incidence of blindness in IIH is notably scarce. In one prospective study conducted by Szewka AJ et al., a bilateral blindness rate of 4% was reported⁴ while two retrospective studies identified rates of 6% and 10%.⁴

In a study conducted by Baheti N et al., which included 43 patients, visual impairment was noted in 80 eyes (93%) upon presentation, with 14% experiencing moderate to severe impairment. The groups were similar in most aspects. Upon the last examination, 9% of patients had experienced significant vision loss.⁵

The impact of visual impairment due to IIH is substantial, particularly considering that the disease primarily affects individuals of working age, notably young women. This demographic profile underscores the significant social and economic ramifications associated with visual impairment in IIH patients. Given the scarcity of international and even more so, local data on the prevalence of visual impairment in idiopathic intracranial hypertension (IIH), the primary objective of my study was to ascertain the frequency of visual impairment in IIH patients. Investigating visual impairment frequency in IIH patients is essential for improving patient care and advancing our understanding of this complex disorder.

Methods

This was a cross-sectional study conducted over a period of six months. After obtaining IRB approval and informed consent from the patients, a total of 129 adult patients aged between 15 to 50 years were included in the study through a consecutive sampling method. Inclusion criteria for IIH were based on the Friedman criteria, while patients with secondary intracranial hypertension or those unwilling to participate were excluded. The demographic characteristics, duration of IIH, and clinical history, were collected from each patient on a pre-designed proforma for analysis. Statistical analysis was conducted using SPSS version 26. Quantitative variables such as age, visual acuity, and body mass index (BMI), were expressed as means $\pm$ SD, while qualitative variables such as gender, impaired color vision, diplopia, and blurred vision were summarized using frequencies and percentages.

Results

In this investigation, a total of 129 patients participated, with a mean age of 32.98 ± 9.62 years and a range between 15 and 50 years. The gender distribution revealed 32 (24.81%) male and 97 (75.19%) female participants. The mean weight of the patients was 76.69 ± 9.16 kg, while the mean height was 1.60 ± 0.052 m, and the mean BMI was 29.90 ± 3.58 kg/m². The cut-off value for obesity was taken at ≥ 30 kg/m² and 68 (52.7%) patients were found to be obese. Additionally, comorbidities were found, including Hypertension in 29 (22.5%) patients, Diabetes Mellitus in 13 (10.1%) patients, 24 (18.6%) patients were found to be smokers, and oral contraceptive pill usage was recorded in 26 (20.2%) female patients. In our study group, 71 (55.04%) participants were married, with a median of 3 children among the married individuals.

Table 1: Frequency distribution of comorbidities

Comorbidities	Frequency	Percent
Hypertension	Yes	29
	No	100
Diabetes Mellitus	Yes	13
	No	116
Smoking	Yes	24
	No	105
OCP usage	Yes	26
	No	103
Obesity (BMI above 30kg/m ²)	Yes	68
	No	61

Physical parameters indicated that blurred vision was observed in 77 (59.7%) patients, decreased vision in 84 (65.1%) patients, diplopia in 64 (49.6%) patients, and impaired color vision in 98 (76%) patients. On fundoscopy, papilledema was noted in 100 (77.5%) patients.

Table 2: Frequency distribution of physical parameters

Physical Parameters	Frequency	Percent
Blurred Vision	Yes	77
	No	52
Decreased Vision	Yes	84
	No	45
Diplopia	Yes	64
	No	65
Impaired Color vision	Yes	98
	No	31
Color vision impairment (Ishihara chart)	Yes	67
	No	47
	Total	114
Papilledema (Fundoscopy)	Yes	100
	No	29
	Total	129

The mean lumboperitoneal (LP) opening pressure was 37.0 ± 6.56 cmH₂O, ranging from 27 to 50 cmH₂O. Our data analysis found no evidence linking obesity to a higher occurrence of visual impairment. Furthermore, we observed no correlation between gender and the frequency of visual impairment.

Discussion

Idiopathic intracranial hypertension (IIH) is a disorder characterized by elevated intracranial pressure of uncertain etiology, typically affecting obese females of childbearing age. Once regarded as benign, IIH is now recognized as a significant cause of visual impairment. Previous studies have indicated that as many as 96% of individuals with IIH may exhibit visual abnormalities during the course of the condition.⁵

In our investigation, we observed that 84 (65.1%) patients reported decreased vision, 64 (49.6%) patients exhibited diplopia, and 98 (76%) patients presented with impaired color vision. Additionally, out of the total 129 patients included in the study, 67 (58.8%) patients were noted to have color vision impairment. The mean lumboperitoneal opening pressure among the patients was recorded as 37.0 ± 6.56 cmH₂O. Several relevant studies are discussed below, highlighting their respective findings. In a study by Kilgore KP et al., it was found that visual symptoms, encompassing transient visual obscurations (TVO), diplopia, and blurred vision, were present in 92% of the participants which was higher than that of our study.⁷ The same study showed complete visual loss in 14 patients out of 57.⁶ In another study by Roye FJ et al., 9% of the study population showed complete visual loss and visual field loss was noted in 75% of the patients.⁸

In the study conducted by Clara L. Afonso et al., it was revealed that after treatment, an improvement in visual function was observed in 28 (56%) patients, while 17 (34%) patients exhibited a stable outcome. Conversely, a worsening of visual function was noted in 5 (10%) patients.⁹ In a prospective study by Szewka AJ et al., a 4% rate of bilateral blindness was reported, while two retrospective studies documented rates of 6% and 10%.⁴ These studies conducted in hospital settings demonstrated a potential selection bias towards the most severe cases and employed diverse criteria to define blindness. Additionally, less severe forms of visual impairment, such as peripheral field constriction, enlargement of blind spots, and deficits in visual acuity, were found to be prevalent, affecting up to 87% of patients.⁵ A preliminary hospital-based study, which tracked 57 patients over a span of 5 to 41 years, revealed that 24% of these individuals experienced either blindness or severe visual impairment.⁹ In another study by Obuchowska I. et al., 39 patients (81%) displayed visual field defects upon initial perimetry assessment. The prevalent visual field defects included blind spot enlargement, typically accompanied by partial peripheral rim involvement (29 eyes, 38.7%), generalized

constriction (16 eyes, 21.3%), and nerve fiber bundle defects, either alone or with concurrent blind spot enlargement (15 eyes, 20%).¹⁰

Our research also examined visual complications in IIH patients, comparing those who are obese with those who are not. The results revealed no noteworthy link between obesity and visual complications. However, Szewka et al. found a significant increase in visual issues among obese IIH patients compared to others, which contrasts with our findings. Additionally, we found no association between gender and visual complications in IIH patients.

While our study showed a spectrum of visual impairment in idiopathic intracranial hypertension (IIH) patients, several limitations should be acknowledged. Firstly, our study had a relatively small sample size. Secondly, our study didn't discuss the presence of other symptoms and complications other than visual impairment, blurring of vision, diplopia and impaired color vision. Additionally, our study didn't discuss the outcome of these complications following management of IIH.

Conclusion

In this study, impaired color vision was the most prevalent visual impairment observed, affecting 76% of patients with Idiopathic Intracranial Hypertension (IIH). Following impaired color vision, decreased vision, blurred vision, and diplopia were also commonly reported among IIH patients. Our study findings will perhaps lead to better management strategies and also contribute towards enhanced patient outcomes.

Ethical Approval: The IRB/EC approved this study via letter no.323/RC/KEMU Dated:18/5/2023

Conflict of Interest: *None*

Funding Source: *None*

Authors' Contribution:

GM: Conception

SB, MH: Design of the work

MH, AJ: Data acquisition, analysis, or interpretation

MH, MH, AJ: Draft the work

GM, SB: Review critically for important intellectual content

All authors approve the version to be published

All authors agree to be accountable for all aspects of the work

References

1. Takkar A, Goyal MK, Bansal R, Lal V. Clinical and neuro-ophthalmologic predictors of visual outcome in idiopathic intracranial hypertension. *Neuro-Ophthalmol.* 2018;42(4):201-8.
2. Huang LC, Winter TW, Herro AM, Rosa PR, Schiffman JC, Pasol J, et al. Ventriculoperitoneal shunt as a treatment of visual loss in idiopathic intracranial hypertension. *J Neuro-Ophthalmol.* 2014;34(3):223-8.
3. Saindane AM, Bruce BB, Riggeal BD, Newman NJ, Biousse V. Association of MRI findings and visual outcome in idiopathic intracranial hypertension. *Am J Roentgenol.* 2013;201(2):412-8.
4. Szewka AJ, Bruce BB, Newman NJ, Biousse V. Idiopathic intracranial hypertension: relation between obesity and visual outcomes. *J Neuro-Ophthalmol.* 2013;33(1):4-8.
5. Baheti N, Nair M, Thomas S. Long-term visual outcome in idiopathic intracranial hypertension. *Ann Indian Acad Neurol.* 2011;14(1):19.
6. Afonso CL, Talans A, Monteiro MLR. Factors affecting visual loss and visual recovery in patients with pseudotumor cerebri syndrome. *Arqu Brasil oftalmol.* 2015;78(3):175-9.
7. Kilgore KP, Lee MS, Leavitt JA, Mokri B, Hodge DO, Frank RD, Chen JJ. Re-evaluating the incidence of idiopathic intracranial hypertension in an era of increasing obesity. *Ophthalmol.* 2017;124(5):697-700.
8. Rowe FJ, Sarkies NJ. Assessment of visual function in idiopathic intracranial hypertension: a prospective study. *Eye.* 1998;12(1):111-8.
9. Corbett JJ, Savino PJ, Thompson HS, Kansu T, Schatz NJ, Orr LS, et al. Visual loss in pseudotumor cerebri: follow-up of 57 patients from five to 41 years and a profile of 14 patients with permanent severe visual loss. *Arch Neurol.* 1982;39(8):461-74.
10. Obuchowska I, Mariak Z. The importance of visual field testing in patients with papilledema and idiopathic intracranial hypertension. *Klinika Oczna.* 2017;119(1):13-7.