

ORIGINAL ARTICLE**Demographic and Clinical Profile of Presbyopia in a Tertiary Care Centre**

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ABSTRACT:

Aim: The study aimed to assess the demographic and clinical profile of presbyopia in individuals attending a tertiary care center, focusing on age, gender, socioeconomic status, occupation, clinical characteristics, and preferred modes of near vision correction. **Material and Methods:** A total of 120 participants diagnosed with presbyopia were selected using a purposive sampling method. Data collection involved demographic assessment (age, gender, socioeconomic status, and occupation) and clinical evaluation (visual acuity, refractive error, and near vision assessment). Comprehensive ophthalmological examinations were conducted to rule out other ocular conditions. Data were analyzed statistically to identify significant trends and associations. **Results:** The 45–54 years age group had the highest representation (45.83%), with a slight female predominance (55.83%). The lower-middle socioeconomic class was the most affected (41.67%). Unskilled workers (33.33%) and skilled workers (25.00%) had the highest occupational prevalence. Clinically, emmetropia (33.33%), myopia (25.00%), and astigmatism (25.00%) were the most common refractive statuses observed. Spectacles (75.00%) were the primary mode of near vision correction, while 8.33% used contact lenses and 16.67% had no correction. **Conclusion:** Presbyopia predominantly affects individuals aged 45–54 years, with a slight female predominance and significant associations with socioeconomic and occupational factors. Spectacles remain the most preferred correction method. Enhancing accessibility to affordable vision correction and increasing awareness are essential to address the burden of presbyopia effectively.

Keywords: Presbyopia, Demographic Profile, Clinical Characteristics, Socioeconomic Status, Near Vision Correction.

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This article may be cited as: Sharma KK. Demographic and Clinical Profile of Presbyopia in a Tertiary Care Centre. J Adv Med Dent Sci Res 2016;4(1):258-262.

INTRODUCTION

Presbyopia is an age-related refractive condition characterized by the gradual loss of the eye's ability to focus on nearby objects. This physiological change typically begins to manifest in individuals around the age of 40 and progresses steadily with age. It occurs due to the natural loss of elasticity in the crystalline lens and weakening of the ciliary muscles, impairing the eye's accommodative ability. As a universal condition, presbyopia affects individuals across all geographic, socioeconomic, and cultural backgrounds. Its global prevalence continues to rise due to increasing life expectancy and aging populations, making it a significant public health concern. Despite its widespread nature, presbyopia often remains underdiagnosed and inadequately managed, particularly in low- and middle-income countries.¹ The World Health Organization (WHO) estimates that over 1.8 billion people globally are affected by presbyopia, with the majority residing in developing countries where access to vision care services is limited. The condition not only impairs daily activities such as reading, sewing, and using digital devices but also affects occupational productivity and overall quality of life. Uncorrected presbyopia contributes significantly to visual impairment, placing a substantial burden on healthcare systems and national economies. While presbyopia is an inevitable part of aging, its impact can be mitigated through early diagnosis and appropriate interventions, including

spectacles, contact lenses, or surgical options such as presbyLASIK and multifocal intraocular lenses.² Age remains the most significant risk factor for presbyopia, with nearly all individuals experiencing its symptoms by the age of 60. However, studies have shown variations in the age of onset and severity across different populations, influenced by genetic, environmental, and occupational factors. Gender differences have also been observed, with women often reporting earlier onset and greater severity of symptoms. This may be attributed to hormonal changes associated with menopause and differences in lifestyle and occupational visual demands. Additionally, educational and socioeconomic status plays a critical role in determining access to vision care services and the likelihood of seeking corrective measures. Geographic disparities are another key demographic consideration. In rural and underserved regions, presbyopia often goes uncorrected due to a lack of awareness, financial barriers, and limited access to optometric services. In contrast, urban populations tend to have better access to eye care facilities and are more likely to use corrective devices. Cultural perceptions and stigma surrounding the use of spectacles can also influence the willingness to seek treatment, particularly among older adults.³ The occupational impact of presbyopia is profound, especially in professions requiring detailed near-vision tasks, such as teaching, sewing, craftsmanship, and administrative work. Individuals in low-income

occupations are disproportionately affected, as their livelihoods often depend on near-vision tasks, yet they have limited access to affordable corrective options. Additionally, uncorrected presbyopia can lead to reduced workplace productivity, job loss, and economic insecurity. On the other hand, individuals in higher socioeconomic groups are more likely to seek early intervention and have access to advanced corrective options, including premium multifocal lenses.⁴ The socioeconomic burden of presbyopia extends beyond individual productivity, affecting families and communities. Many older adults with uncorrected presbyopia may rely on family members for assistance with daily tasks, creating an additional social burden. Addressing these disparities requires targeted interventions, including community-based eye care programs, affordable vision correction devices, and educational campaigns to raise awareness about presbyopia and its management. From a clinical perspective, presbyopia can coexist with other refractive errors such as myopia, hypermetropia, and astigmatism, complicating its diagnosis and management. Emmetropic individuals often notice presbyopic symptoms earlier, while myopes may experience delayed onset due to their natural near-vision advantage. Hypermetropes, on the other hand, may experience more pronounced symptoms at an earlier age due to their existing accommodative burden.⁵ The primary method of managing presbyopia remains optical correction, with reading glasses and progressive lenses being the most commonly used options. Contact lenses, including bifocal and multifocal varieties, offer an alternative for individuals seeking spectacle-free correction. Surgical interventions, such as presbyLASIK, monovision LASIK, and intraocular lens implantation, have gained popularity in recent years but remain financially inaccessible to many. Emerging technologies, including pharmacological treatments aimed at restoring lens flexibility, hold promise for the future of presbyopia management.⁶ Understanding the demographic and clinical profile of presbyopia is essential for developing effective public health strategies and clinical interventions. Despite the high prevalence of presbyopia, there is a lack of comprehensive data on its demographic and clinical characteristics in many regions, particularly in low-resource settings. Identifying key demographic patterns, socioeconomic influences, and clinical characteristics can guide policymakers in allocating resources and designing targeted vision care programs.⁷ Moreover, the growing reliance on digital devices has altered visual demands, potentially influencing the onset and progression of presbyopia. Investigating these emerging trends is crucial for addressing the evolving visual needs of populations. This study aims to bridge these gaps by providing a detailed analysis of the demographic and clinical profile of presbyopia in a tertiary care setting, offering

insights into its prevalence, associated factors, and preferred management approaches.

MATERIAL AND METHODS

The study was conducted to assess the demographic and clinical profile of presbyopia in a tertiary care center. A total of 120 participants, comprising individuals diagnosed with presbyopia, were recruited for the study. Participants were selected using a purposive sampling method, ensuring representation across various age groups and socioeconomic backgrounds. Informed consent was obtained from all participants prior to enrollment.

Data collection involved a detailed clinical examination and demographic assessment. The demographic data included age, gender, occupation, and socioeconomic status, while the clinical evaluation comprised visual acuity testing, refractive error measurements, and near vision assessment using a standard near vision chart. Additionally, a thorough ophthalmological examination was performed to exclude other ocular conditions that might influence the study outcomes.

The study adhered to ethical principles, with approval obtained from the Institutional Ethics Committee. Data were recorded systematically and analyzed to identify trends and correlations in the demographic and clinical characteristics of the participants. Statistical analysis was conducted using appropriate software to ensure accuracy and reliability of the findings.

RESULTS

Age and Gender Distribution of Participants (Table 1)

The study included 120 participants, with 53 males (44.17%) and 67 females (55.83%). The age group of 45–54 years had the highest representation, accounting for 55 participants (45.83%), followed by the 35–44 years age group with 35 participants (29.17%). Participants aged 55–64 years constituted 25 individuals (20.83%), while only 5 participants (4.17%) were in the ≥ 65 years age group. Among males, the highest representation was in the 45–54 years age group (20.83%), while females were also most represented in the 45–54 age group (25.00%). The gender distribution across the age groups showed statistical significance in the 35–44 years ($p=0.045$) and 45–54 years ($p=0.032$) categories, indicating a meaningful difference in gender representation within these age ranges. The findings suggest that presbyopia predominantly affects individuals in their late 40s and early 50s, with a slight female preponderance.

Socioeconomic Status of Participants (Table 2)

Regarding socioeconomic status, the lower-middle class had the largest representation with 50 participants (41.67%), followed by the upper-middle class (30 participants, 25.00%) and the upper-lower class (20 participants, 16.67%). The upper and lower

socioeconomic classes had the least representation, with 10 participants (8.33%) each. Statistically significant differences were observed in the upper-middle class ($p=0.050$) and lower-middle class ($p=0.012$) groups, suggesting a strong association between socioeconomic status and the prevalence of presbyopia. These results indicate that presbyopia is more common in middle-income groups, possibly due to their lifestyle and occupational visual demands.

Occupational Distribution of Participants (Table 3)

In terms of occupational distribution, unskilled workers were the most represented group, comprising 40 participants (33.33%), followed by skilled workers (30 participants, 25.00%), homemakers (25 participants, 20.83%), and professionals (20 participants, 16.67%). The retired group had the lowest representation, with only 5 participants (4.17%). Statistically significant differences were observed among skilled workers ($p=0.045$) and unskilled workers ($p=0.022$), highlighting a strong occupational influence on presbyopia prevalence. The findings suggest that unskilled and skilled workers, due to their occupational visual demands and limited access to eye care, are more prone to presbyopia compared to other groups.

Clinical Characteristics of Participants (Table 4)

From a clinical perspective, 40 participants (33.33%) had emmetropia, followed by 30 participants (25.00%) with myopia, another 30 participants (25.00%) with astigmatism, and 20 participants (16.67%) with hypermetropia. Statistically significant associations were found for emmetropia ($p=0.030$), myopia ($p=0.050$), and astigmatism ($p=0.045$). Hypermetropia did not show statistical significance ($p=0.080$). These results indicate that presbyopia affects individuals regardless of pre-existing refractive status, though emmetropes and myopes are more represented in the sample.

Near Vision Correction Among Participants (Table 5)

Regarding near vision correction, 90 participants (75.00%) relied on spectacles for near vision correction, while 10 participants (8.33%) used contact lenses. Interestingly, 20 participants (16.67%) did not use any form of near vision correction. Statistical significance was observed only in the spectacle correction group ($p=0.012$), indicating a predominant reliance on spectacles as the primary mode of near vision correction. Contact lens usage and the absence of correction were not statistically significant ($p=0.150$ and $p=0.070$, respectively). These findings suggest that spectacles remain the most accessible and preferred correction method for presbyopia among the study participants.

Table 1: Age and Gender Distribution of Participants

Age Group (Years)	Male (n)	Male (%)	Female (n)	Female (%)	Total (n)	Total (%)	p-value
35–44	15	12.50%	20	16.67%	35	29.17%	0.045*
45–54	25	20.83%	30	25.00%	55	45.83%	0.032*
55–64	10	8.33%	15	12.50%	25	20.83%	0.080
≥65	3	2.50%	2	1.67%	5	4.17%	0.120
Total	53	44.17%	67	55.83%	120	100.00%	—

Table 2: Socioeconomic Status of Participants

Socioeconomic Status	Number (n)	Percentage (%)	p-value
Upper	10	8.33%	0.210
Upper Middle	30	25.00%	0.050*
Lower Middle	50	41.67%	0.012*
Upper Lower	20	16.67%	0.070
Lower	10	8.33%	0.180
Total	120	100.00%	—

Table 3: Occupational Distribution of Participants

Occupation	Number (n)	Percentage (%)	p-value
Professionals	20	16.67%	0.090
Skilled Workers	30	25.00%	0.045*
Unskilled Workers	40	33.33%	0.022*
Homemakers	25	20.83%	0.060
Retired	5	4.17%	0.150
Total	120	100.00%	—

Table 4: Clinical Characteristics of Participants

Parameter	Number (n)	Percentage (%)	p-value
Emmetropia	40	33.33%	0.030*
Myopia	30	25.00%	0.050*
Hypermetropia	20	16.67%	0.080
Astigmatism	30	25.00%	0.045*
Total	120	100.00%	—

Table 5: Near Vision Correction Among Participants

Near Vision Correction Method	Number (n)	Percentage (%)	p-value
Spectacles	90	75.00%	0.012*
Contact Lenses	10	8.33%	0.150
No Correction	20	16.67%	0.070
Total	120	100.00%	—

DISCUSSION

In the present study, the age group 45–54 years had the highest prevalence of presbyopia (45.83%), with a slight female predominance (55.83% females vs. 44.17% males). These findings are consistent with the results reported by Holden et al. (2008), who observed that presbyopia prevalence increases with age, peaking in the late 40s and early 50s, and noted a higher prevalence among females due to biological and hormonal differences affecting accommodation and lens elasticity. The increased prevalence in females may also be linked to their higher life expectancy and more significant near-vision demands in household tasks.⁸

The study found that the lower-middle socioeconomic class had the highest representation (41.67%) of presbyopic participants, followed by the upper-middle class (25.00%). A significant association was observed in the upper-middle ($p=0.050$) and lower-middle ($p=0.012$) groups. These findings are in agreement with a study conducted by Nirmalan et al. (2006) in India, which reported that individuals from middle-income groups were more likely to seek near-vision correction due to better access to healthcare services and increased occupational visual demands. However, lower-income groups often delay or neglect treatment due to financial constraints.⁹

Unskilled and skilled workers were the largest occupational groups affected by presbyopia, accounting for 33.33% and 25.00%, respectively. Statistically significant associations were noted for both skilled ($p=0.045$) and unskilled ($p=0.022$) workers. A similar occupational trend was reported by Lu et al. (2009), who found that individuals engaged in tasks requiring continuous near-vision focus, such as sewing, assembly line work, and manual labor, were at higher risk of developing presbyopia earlier. Limited access to proper eye care and corrective lenses among unskilled workers exacerbates the condition.¹⁰

In this study, 33.33% of participants were emmetropic, while 25.00% had myopia, 25.00% had astigmatism, and 16.67% had hypermetropia. Statistically significant associations were observed for emmetropia ($p=0.030$), myopia ($p=0.050$), and

astigmatism ($p=0.045$). These findings align with the results reported by Duane (1922), who observed that presbyopia manifests differently in individuals with varying refractive statuses. Myopic individuals tend to experience a delayed onset of presbyopia, while hypermetropes are prone to earlier symptoms. The significant representation of emmetropic and myopic participants in this study underscores the universal nature of presbyopia across refractive error profiles.¹¹ The majority of participants (75.00%) relied on spectacles for near vision correction, while only 8.33% used contact lenses, and 16.67% did not use any correction method. A statistically significant association was observed for spectacle use ($p=0.012$). This finding is consistent with a study conducted by Patel et al. (2006), which reported that spectacles remain the most commonly used correction modality for presbyopia worldwide due to their affordability, accessibility, and ease of use. The limited adoption of contact lenses and the absence of correction in a notable proportion highlight the need for improved awareness and accessibility to diverse correction options.¹²

CONCLUSION

This study highlights the demographic and clinical profile of presbyopia, emphasizing its higher prevalence among individuals aged 45–54 years, with a slight female predominance. Socioeconomic and occupational factors significantly influence the onset, progression, and management of presbyopia, with middle-income and visually demanding occupations being most affected. Spectacles remain the preferred mode of near vision correction, while contact lenses and surgical interventions are underutilized. Addressing the barriers to eye care services, improving awareness, and ensuring affordable corrective options are essential to reducing the burden of presbyopia and enhancing quality of life for affected individuals.

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