

The Impact of Presbyopia on Daily Life and its Management Strategies

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Abstract: Presbyopia, an age-related decline in near vision resulting from diminished accommodative ability of the crystalline lens, represents one of the most prevalent refractive errors globally, currently affecting approximately 1.85 billion individuals with projections reaching 2.7 billion by 2050. This review examines the multifaceted impact of presbyopia on daily functioning and explores current management strategies across optical, surgical, and lifestyle domains. Uncorrected presbyopia imposes substantial individual and societal burdens, including significant productivity losses exceeding US\$25 billion annually, particularly in low- and middle-income countries where access to correction remains limited. The condition adversely affects near-work activities such as reading, computer use, and mobile device operation, while also influencing psychosocial well-being and social participation. Comprehensive assessment requires detailed history-taking, measurement of near and distance visual acuity, refractive evaluation, and accommodation testing to distinguish presbyopia from concurrent ocular pathologies. Management options span from conventional optical corrections—including reading additions, progressive lenses, multifocal and monovision contact lenses—to surgical interventions such as refractive lens exchange, phakic intraocular lenses, and corneal procedures. Additionally, lifestyle modifications encompassing ergonomic adjustments, optimized lighting, adaptive devices, and digital accessibility features serve as important complementary measures. Special considerations for diverse populations, patient education, adherence strategies, and health system accessibility are discussed. Despite its growing public health significance amid ageing populations and escalating near-vision demands from digital technology, presbyopia remains under-recognized in research and clinical practice. This review underscores the necessity for improved awareness, standardized diagnostic protocols, equitable access to correction, and continued innovation to mitigate the global burden of presbyopia.

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I. INTRODUCTION

Presbyopia is one of the most common refractive errors worldwide, impacting nearly two billion people today and by 2030 2.4 billion people will be affected (S Wolffsohn et al., 2023). Presbyopia is a condition that can affect people who need clear vision at near distances and can have a significant impact on their everyday lives. The problem with presbyopia is that it is caused by ageing changes in the crystalline lens and its capsule, which means the eye has less ability to accommodate. These biomechanical changes in the lens seem to become evident in the late 20's, and become clinically evident as presbyopia sometime between mid-30's to early 50's. Presbyopia affects an estimated 1.85 billion people, and is expected to have an impact on 2.04 billion people in 2030. There are demographic differences in different regions, with more than 70% of 50-year-olds being affected (Brucic et al., 2022). This review will explain what presbyopia is and will clarify the degree of the problem and why it is important. For this purpose, the present literature was surveyed to outline the scope, implications and measures that might be undertaken to mitigate the impact. A detailed study of the care of presbyopia in those who need to see near objects at the normal distance is a good example of how this common condition can affect

the way people live, physically and psychologically. The various interventions possible for correcting this refractive error, in turn, enable consideration of the patient's needs and a balanced assessment of the patient-healthcare provider relationship.

➤ Epidemiology and Etiology

Presbyopia is the inability to focus on near objects dependent on age-related changes in the lens and ciliary muscle affecting one's eyesight. However, not much research has been carried out about its general prevalence and on the epidemiology dynamics and effect on society as a whole. The authors conducted a systematic review of papers published between 1990 and 2020 that examined the prevalence of presbyopia in the global adult population, as well as the prevalence of uncorrected presbyopia and the factors associated with it. They found that more than 2 billion people have different levels of nearsightedness. Presbyopia is uncorrected, and is primarily found in people from developing countries, where glasses and other methods of correction are not easily accessible (A Katz et al., 2021). 746 million people are visually unmet with macro-economic loss more than US\$25 billion, especially in rural India where there is a productivity loss of a staggering 32.2% due to lack of

spectacles (S Wolffsohn et al., 2023). Presbyopia, from a functional perspective as well as from a socio-economic perspective, is a health threat to society beyond the popular notion that it is part of normal ageing. There are a number of

myths surrounding this oculomotor condition that it is completely genetic, it cannot be prevented, that it only affects elderly people, and that there are 'treatments' like 'reading in advance' that will be of benefit.

Table 1 Global Burden of Presbyopia: Key Epidemiological and Economic Indicators.

Indicator	Estimate	Source
People currently affected (2020)	~1.85 billion	Wolffsohn et al., 2023
Projected affected by 2030	2.04 billion	Wolffsohn et al., 2023
Projected affected by 2050	2.7 billion	Wolffsohn et al., 2023
Adults aged 50 affected	>70%	Brujic et al., 2022
People with uncorrected presbyopia	~746 million	Wolffsohn et al., 2023
Global productivity loss (uncorrected)	>US\$25 billion / year	Wolffsohn et al., 2023; Malhotra et al., 2022
Productivity loss, rural India	32.2%	Wolffsohn et al., 2023

II. EFFECTS OF PRESBYOPIA ON DAILY FUNCTIONING

Presbyopia is the most common vision problem in the world, affecting the majority of people over the age of 45. People who have not been corrected for presbyopia find it hard to read books, a computer or cell phone information. Therefore, uncorrected presbyopia is linked to decreased quality of life and economic loss because it becomes more difficult and complex for persons to perform tasks or jobs that involve reading. In India, one survey conducted in the cohort reported that the productivity loss due to uncorrected presbyopia amounted to USD 6 billion a year, and USD 25 billion for the workforce as a whole. Furthermore, lower income countries lack good coverage on uncorrected presbyopia resulting from lack of access to the most suitable optical correction (A Katz et al., 2021). Presbyopia spanning

spectacles not only act as an enabling factor to read but also they help to finish the social integration processes. Social activities begin to lessen in frequency for many older, retired people when they are no longer able to read the newspaper or participate in hobbies and recreational activities like creating or sewing. The individual, societal and economic burden of a problem as widespread as presbyopia cannot be properly understood without an assessment of its impact on daily functioning, which involves reading, computer use, driving and work tasks as well as consequences on psychosocial functioning. With the increasing ageing population and the lack of access to vision care in developing countries, Presbyopia is continuing to grow as a public health problem around the world. It affects more than 2 billion people in the world, and is expected to affect 2.7 billion by 2050 (S Wolffsohn et al., 2023).

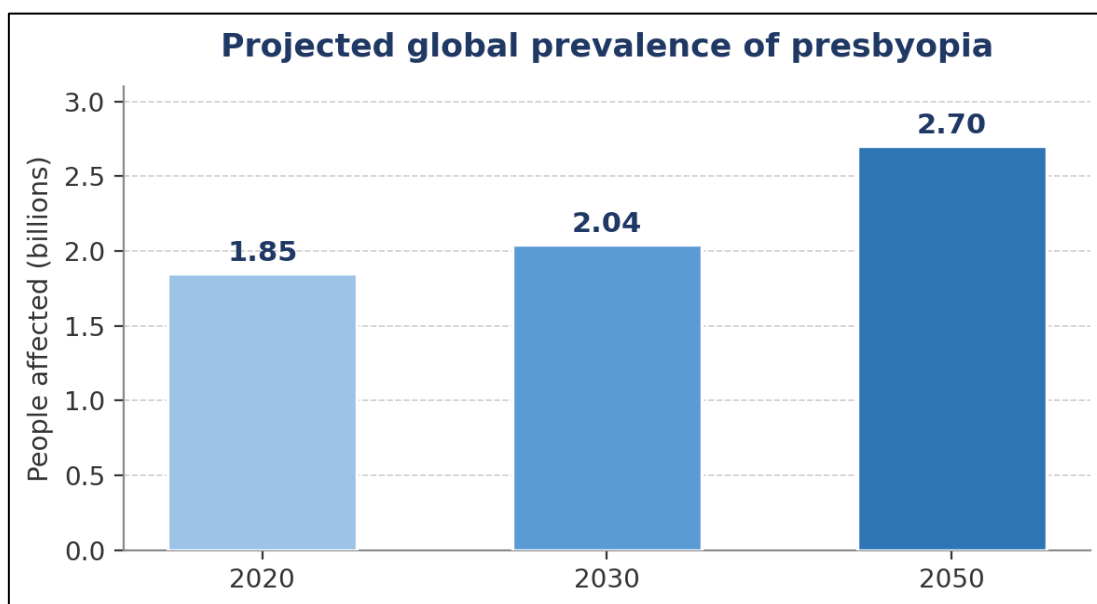


Fig 1 Projected Growth in the Global Prevalence of Presbyopia, 2020–2050 (Wolffsohn et al., 2023).

➤ Assessment and Diagnostic Approaches

A thorough examination should be a composite of several methods for the diagnosis and assessment of presbyopia: history, visual acuity (near and distance), refractive correction, accommodation testing, and differentiating from other conditions. All of these can be used

individually within their given context to gain a comprehensive problem understanding. The examination must start with a detailed history, in which the specific problems related to presbyopia must be explained. The distance from the book, newspaper or screen, frequency and timing of the task, duration of the task, the position in relation

to other bifocal work, position of other spectacles, etc. should be considered characteristic of near work. This should be distinct from the distance between the near work of a near add and the slow progression from close to and intermediate distance to far vision that is required by younger adults who are myopic because of presbyopia. General questions relating to color perception (red, green, blue, yellow, etc.), pupil size, glare and halos should also be asked, to help guide management and distinguish any concurrent disorders such as cataracts (Brujic et al., 2022) (S Wolffsohn et al., 2023).

III. MANAGEMENT STRATEGIES

An overview of the patient journey and person-centred decision making across the globe. Presbyopia is one of the most common vision problems in the world touching more than 2 billion people, but is not sufficiently treated. There are a host of management options by using various optical, surgical and lifestyle changes, but little clinical guidance with respect to when to use which treatment and treatment combination. Patients have a high level of unmet needs which seriously restrict their daily functioning in a number of activities. (S Wolffsohn et al., 2023).

➤ Optical Corrections

There are several types of optical correction available for presbyopia, including reading glasses, progressive lenses, contact lenses, monovision and prosthetic devices. Reading additions are supplementary lenses to aid near tasks. They can be worn with distance lenses or in more advanced situations can be worn alone. The range of standard reading additions, as specified in the ADD table of ISO 8596:2017 is from +0.75 D to +5.00 D. The correction of additions should not be greater than +4.00 D without astigmatism. Progressive Lenses are designed to help you see through every focal point. Unless reading is the main focus, they offer the greatest pantoscopic angle, the greatest distance fitting height and the least corridor length. There are lots of previous glass measurement choices. Billable lenses have flat rates adjusted for adaptation phases, multifocalContact lenses have discrete sight points, they support physiological lenses, prevent the stigmatized glasses and do not position them longitudinally. However, with daily disposable lenses it's necessary to have extra stock. Monovision corrects both near and distance vision in one eye. The average gap is filled by degrees of correction or loss of binocularity. It is successful when both aspects are ubiquitous. In before trying monovision, or if considering more factors for sight, a trial with reading spectacles can help decide if it is appropriate. Prosthetic devices should not only be spectacle lenses, but they should also restore angular vision; steps to overcome bilateral offset work better in a mid-frame (if possible). If the compasses are adapted to the trial while in suspension, it is necessary to make stable vision around the entire cylinder when it is rotated in order to make cylindrical pin basic. The term is used in conjunction with "micro" for segmentation less than 45° for close offsets or "pocket" for two specimens for as-formulated and affixed polarisation by removing fidelity with the help of the mirrors along zones. The other conditions on closer bar measures indicate if the through-the-spectacle tax

on eyeline is still predominant guidance (S Wolffsohn et al., 2023).

➤ Surgical and Minimally Invasive Options

There are a number of minimally invasive and surgical approaches to correct presbyopia. Refractive lens exchange and presbyopic phakic intraocular contact lenses are the lens-based procedures. The corneal procedures include laser refractive surgery, intracorneal inlay surgery, and multifocal corneal profile. Scleral surgery includes the ability to create multifocality with scleral implants and techniques for removing tissue using femtosecond laser surgery (A Katz et al., 2021). The selection of the right candidate is crucial to achieving success. Surgical procedures using lenses can correct distance vision (monofocal IOLTA) or near vision (multifocal IOLTA) for patients. For higher ametropic corrections, refractive lens exchange is a suitable option, while low amounts of hyperopia or myopia that are not adequately corrected by laser correction are typically treated with presbyopic phakic intraocular contact lens. Intracorneal configurations have been tested that enhance near vision without compromising distance vision. Reduced vision, hyperopic shifts and corneal opacity are concerns (Grzybowski et al., 2020).

➤ Lifestyle Modifications and Adaptive Devices

Presbyopia can have an impact on everyday life as well as quality of life. With age, the demand for vision, of course, switches from long distance to near, and individuals look to practical solutions to meet that demand and to gain some extra help. Coping strategies include working with a tool or equipment to the task or environment, modifying activities to make them easier to do or modifying approaches to daily activities. Ergonomic modifications range from the proper distance to the book or the screen, positioning of work space, positioning of reading materials, and the angle of approach when driving and doing manual jobs. Considering the importance of lighting conditions, such as maximising ambient light and minimising the glare, is another method of optimizing the visual field. When using a computer, it is also good practice to install luminaires so that they will not reflect light on the screen. Hand-held lenses, reading glasses, magnifying sheets or spectacles, task lighting that incorporates lenses and electronic magnifiers are all available for magnification. Digital devices provide features that can be accessed by the user, such as increasing the size of the display, adjusting the text, changing the background etc., and automatic brightness and contrast controls make them easy to operate. People can also rethink their daily schedule, for example, the best time for going to school or continuing education, to the time when they can go to the store and buy items in favorable light, to the time when they can write, or to the time when they can perform administrative tasks shortly after the conclusion of the meeting they have just left. People can also rethink their daily schedule, for example, the best time to go to school or continuing education, to the time when they can buy items in the store with the best light, etc. to the time they can write, etc. to the time they can perform administrative tasks shortly after the conclusion of the meeting they have just left, to achieve better visual comfort (Brujic et al., 2022) ; (S Wolffsohn et al., 2023).

Table 2 Comparison of Management Strategies for Presbyopia.

Approach	Examples / details	Advantages	Limitations
Reading additions / glasses	+0.75 D to +5.00 D adds (ISO 8596:2017)	Simple, low-cost, non-invasive	Single focal range; several pairs may be needed
Progressive lenses	Graduated distance–intermediate–near power	Seamless multi-distance vision in one lens	Adaptation period; narrow near corridor
Multifocal contact lenses	Discrete near and distance zones	Spectacle-free; cosmetic preference	Spare stock needed; handling and hygiene
Monovision	One eye corrected for near, the other for distance	Reduces spectacle dependence	Reduced binocularity; trial advised first
Refractive lens exchange / IOLs	Monofocal or multifocal intraocular lenses	Treats higher refractive errors	Surgical risk; suited to selected candidates
Corneal & phakic procedures	Laser surgery, intracorneal inlays, phakic IOLs	Enhances near vision, preserves distance	Reduced vision, hyperopic shift, corneal opacity
Lifestyle & adaptive measures	Ergonomics, lighting, magnifiers, display settings	Inexpensive; complements other options	Partial relief; does not correct refraction

➤ *Special Populations and Considerations*

Some special populations in the population over 30 years of age, with presbyopia who need some kind of help for close vision should be highlighted. The visual impairments due to presbyopia can be found among individuals with no formal education as well as those at university level. The major issue of sight loss problems is seen in the individual using eyeglasses in the field of education in people who have no formal schooling, junior secondary and senior secondary schooling. In the business sector sight loss problems are higher among those that need a magnifying glass, spotlight or led lights and reading glasses. At the same time, economic/salaried individuals are more affected compared to self-employed owners. There is an element of cultural/literary affinity and interest. When considered under cultural/literary factors, it is observed that there are more sight loss issues among the community that values aesthetic while the community that does not value aesthetic has fewer sight loss issues. When searching for solutions and asking for help when impaired by presbyopia, there will be characteristic in vernacular language between different vernacular language group (e.g., Mandarin speaker and Cantonese speaker) (Brujic et al., 2022).

➤ *Patient Education and Adherence*

Patients' knowledge and understanding of presbyopia can affect their adherence to their management strategies. Strategies for informing patients generally revolve around educating patients about presbyopia as a treatable condition, clarifying symptoms and management, and supporting shared decision making (Hutchins & Huntjens, 2021). As a result, health-care providers have a critical role in the process of selecting the strategy. Prenuptial discussion is usually preferred and can be done during standard health screenings in the age range 40-74 or prior to the onset of vision loss. The information given is mostly about optical management, such as the benefits of wearing contact lenses as compared to eyeglasses. Patient's awareness and management of presbyopia influences compliance to a varying extent. After optical management is determined some steps can be taken to encourage compliance: frequent follow-up visits increase compliance and satisfaction (Brujic et al., 2022).

IV. HEALTH SYSTEMS AND ACCESSIBILITY

Presbyopia is a problem that impacts over 1 billion people worldwide (S Wolffsohn et al., 2023). It is linked with deteriorations in visual, economic and social quality of life and is therefore a great, but sometimes undiagnosed, public health concern (Brujic et al., 2022). The estimated losses of productivity due to uncorrected presbyopia are around US\$25 billion annually, mostly in low-income countries (Malhotra et al., 2022). In rural India, spectacle correction has demonstrated to improve income and productivity. The burden on society is not equal and depends on the economic state of the nation, on what fraction of the work requires near vision and on the availability of correction. The structure would have been altered not built from the irregular polypeptide chains the *Pseudomonas Aeruginosa* Surface Attachment Virus (PAE) Model consists of. The attachment to the substrate of an "elastic and void-like" network, which allows the pseudomature form to be more advantageous for the cell's ability to attach to the substrate is not provided by the 1 glass-supported micropipette method since the filament is always held up by the pipette when not immersed in the growth solution. This is crucial for regulating puckerings of the channels to provide the pump necessary to stretch the substrate for insertion and is especially suitable within the spherical site. Uncorrected presbyopia affects the functioning and quality of life of people in many different ways all over the world. Patient-reported outcome measures (PROMs) have been used to measure this burden and to measure the effectiveness of interventions but lack of presbyopia-specific PROMs is a limiting factor for wider use. Efforts are ongoing to meet this need, including the development of specific PROMs, like the Presbyopia Impact and Coping Questionnaire. Complementary technological innovations are computerised adaptive testing, and new methods of visual–optical quantification of the quality of vision and of optical alternatives, such as the recently proposed score MAS-2EV. Emergent myopia, as seen in the East Asian region, imposes further difficulties for presbyopic people and higher prevalence of the latter highlights the need for myopia control strategies. Presbyopes with myopia recover their vision with corrective modalities, but at the same time they lose their functionality. The gap also applies to behaviours in relation

to care seeking, as well as to the level of professional input to populations with presbyopic or myopic-presbyopic situations.

➤ *Future Directions and Research Gaps*

Although many elderly people throughout the world suffer from presbyopia, the condition is not well studied by the medical community. This problem remains because of either lack of reporting or lack of awareness of its importance as a public health problem or the outdated signposting (accommodation measures and not near vision or disability related difficulties). There are several new and promising medical and surgical approaches that are progressing rapidly, but which are actually useful for achieving natural near vision and corresponding treatment concepts remain unclear (S Wolffsohn et al., 2023). The emergence of mobile devices such as smartphones at a fast pace would make the phenomenon of mobile presbyopia trend another area of research. As more people become presbyopic, so do the advances of digital health. Near vision demands have greatly increased, especially in the daily routine thanks to the proliferation of smartphones, social media and greater access to literacy and education. Many papers are now being submitted to investigate how the environment, lifestyle and/or the demands of work affect the eyes of patients, or their eye health. These more comprehensive approaches to treating presbyopia would merit providing the ophthalmic community with the rest of the information. Video-media glasses are not mainly used for recovery; on the contrary, the field of application for the recovery glasses is to explore the short distance activities of the user within their surroundings (venues) at a few meters distance.

V. CONCLUSION

One of the big issues of our society today is presbyopia with an aging population. When the changes in society that extend the lifespan of people are matched by the loss of their ability to do the simple things of life, it becomes a public health problem called presbyopia. Myopia is a disorder of tissue regulation which can happen at a young age and is comparatively easier to understand. The view of the presbyopia review shows that physicians from various medical professions have patients at various ages with presbyopia and that this condition is thought of as an ageing process rather than a healthy growth. It appears that more important than the original order of things are education, social service and individual variation.

Consumer goods are accompanied by advanced small displays from new technologies and socio-economic changes. The trend of the past few years has been to switch from a lot of people wearing reading glasses when they are 40-45 years old to when they are approximately 30 years old, or even younger. Although there has been a rise in cases, there are still a lot of people who aren't conscientious about it. In addition, presbyopia might not develop 10 years earlier than most people think, and may not occur in an individual well into middle age. Little or no information is available on best practice in diagnosis, management or education of patient. Presbyopia related practitioners, meanwhile, have a

background related to ocular health or not, and don't feel sufficiently educated on nature of the task or the symptoms involved. A simple case of presbyopia perspective at macro level can be a starting point, a little effort was obtained earlier in the practice, but many patients would ask the same question.

Even though it is associated with the changes of the topological properties of the media, as mentioned above, it is always neglected by the systemic or mathematical disciplines. Research in either study tends to possess a provisional aspect, lending perhaps it by chance be on several occasions – that it appear intermittently on different occasions instead of continuous occurrence – is rather a shut desk towards the research. A comprehensive and high-performance liquid chromatography is not readily available, and it may be useful to correlate time of attention span, which is possible. The large gap still exists yet remains untouch by society as well as academic disciplines on the topic of address in presbyopia perspective in the publication.

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