Scientific Research Publishing

Open Journal of Ophthalmology, 2026, 16(2), 86-93
https://www.scirp.org/journal/ojoph
ISSN Online: 2165-7416
ISSN Print: 2165-7408

Epidemiology of Near Vision Impairment among Adults Aged 50 Years and Older in Northern Togo: Results from a 2024 RAAB Survey

Mawuli A. K. Santos[1*], Germain Hounguevou[1], Godwin Houndjafo[1], Kossi Dzidzinyo[1], Yawo S. Prempe[2], Nidain Maneh[1], Kokou Vonor[3], Koffi D. Ayena[1]

[1]Department of Ophthalmology, Faculty of Health Sciences, Université de Lomé, Lomé, Togo
[2]National Eye Health Program, Lomé, Togo
[3]Department of Ophthalmology, Faculty of Health Sciences, Université de Kara, Kara, Togo
Email: *santosmawuli@yahoo.fr

How to cite this paper: Santos, M.A.K., Hounguevou, G., Houndjafo, G., Dzidzinyo, K., Prempe, Y.S., Maneh, N., Vonor, K. and Ayena, K.D. (2026) Epidemiology of Near Vision Impairment among Adults Aged 50 Years and Older in Northern Togo: Results from a 2024 RAAB Survey. *Open Journal of Ophthalmology*, **16**, 86-93.
https://doi.org/10.4236/ojoph.2026.162010

Received: February 14, 2026
Accepted: March 21, 2026
Published: March 24, 2026

Abstract

Objective: To describe the epidemiology of near vision impairment among adults aged 50 years and older in northern Togo in 2024. **Methods:** A population-based cross-sectional study was conducted using the Rapid Assessment of Avoidable Blindness (RAAB) methodology between 18 November and 13 December 2024 in northern Togo. The primary outcome was presenting near visual acuity (PNVA) measured at 40 cm with available correction. Near vision impairment was defined as near visual acuity worse than N6 at 40 cm according to WHO definitions. A multistage cluster sampling design was used. Data on sociodemographic characteristics, ownership of near-vision spectacles, and household socioeconomic status were collected. Prevalence estimates were generated using the RAAB7 automated analysis platform, which accounts for the cluster sampling design and provides 95% confidence intervals. **Results:** A total of 4290 participants were examined (response rate: 99.8%), of whom 63.8% were women. The mean age was 63.1 ± 10.4 years. The overall prevalence of near vision impairment was 81.9% (95% CI: 80.7 - 83.0). NVI was significantly more common among women than men (86.1%, 95% CI: 84.8 - 87.4 vs 74.6%, 95% CI: 72.4 - 76.7). Only 18.3% of participants owned near-vision spectacles (95% CI: 17.1 - 19.5). Among those who had never used spectacles, the main reasons for non-use were lack of perceived need (63.1%), financial constraints (20.9%), and unavailability of spectacles (16.0%). Most participants with NVI reported socioeconomic vulnerability, including insufficient household income (57.4%) and inadequate or just adequate food supply

(97.9%). **Conclusion:** Near vision impairment is highly prevalent among adults aged 50 years and older in northern Togo. The high burden of uncorrected NVI and the very low coverage of near-vision spectacles highlight the urgent need to integrate presbyopia services into primary eye care and expand access to affordable spectacle provision.

Keywords

Near Vision Impairment, Presbyopia, Older Adults, RAAB, Togo

1. Introduction

Population ageing represents a major global public health challenge. In 2019, an estimated 703 million people worldwide were aged 65 years and older, a number projected to increase by more than 120% by 2050, with particularly rapid growth in sub-Saharan Africa [1] [2]. Ageing is associated with an increased burden of sensory impairments, especially visual impairment, which significantly affects functional independence and quality of life [3]-[5].

Visual impairment is linked to an increased risk of falls, depression, dependency, and reduced social participation among older adults [4]-[7]. According to the World Health Organization (WHO), visual impairment includes deficits in distance or near visual acuity, visual field, or contrast sensitivity [8]. Near vision impairment is operationally defined as near visual acuity worse than N6 at 40 cm [8].

Globally, approximately 2.2 billion people live with near or distance vision impairment, with at least one billion cases being preventable or unaddressed [9]. The burden is disproportionately high in low- and middle-income countries, where more than 80% of near vision impairment remains uncorrected [7] [9]. Rapid Assessment of Avoidable Blindness (RAAB) surveys are the standard tool recommended to estimate the prevalence of visual impairment among adults aged 50 years and older [10].

In Togo, the only RAAB survey conducted in 2014 focused on distance vision and did not assess near vision impairment [11]. In the absence of national data on near vision impairment, this study aimed to describe the epidemiology of near vision impairment among adults aged 50 years and older in northern Togo in 2024.

2. Methods

2.1. Study Design and Setting

This was a population-based cross-sectional study using the RAAB methodology, conducted from 18 November to 13 December 2024. The study took place in the Centrale, Kara and Savanes regions, as well as in the prefectures of Akebou and Est Mono, covering approximately 60% of the national territory.

2.2. Study Population

The target population included all men and women aged 50 years and older who had been living in the study area for at least six months. Individuals residing in institutions and temporary visitors were excluded.

2.3. Sampling Procedure

A multistage cluster sampling design was used. Sample size was calculated using RAAB software based on an expected blindness prevalence of 3.6%, a confidence intervals of 95%, a relative precision of 20%, a design effect of 1.5 and a non-response rate of 10%.

A total of 4300 participants were required, distributed across 86 clusters of 50 individuals selected with probability proportional to size using 2022 census data. Compact segment sampling was applied within clusters.

2.4. Data Collection

Five trained RAAB survey teams conducted household visits. The primary outcome was presenting near visual acuity measured at 40 cm with available correction. Near visual acuity was assessed using standard near-vision charts under field conditions following the RAAB7 protocol. Sociodemographic characteristics (age, sex), ownership of near-vision spectacles, and household socioeconomic indicators (food adequacy and income sufficiency) were collected using structured questionnaires.

2.5. Statistical Analysis

Data were entered using RAAB7 software developed by the London School of Hygiene and Tropical Medicine (LSHTM). Data were analyzed using Excel and R software. Categorical variables were summarized as frequencies and percentages. Prevalence estimates were calculated with 95% confidence intervals. Comparisons between groups were performed using the Chi-square test, with a significance level set at $p < 0.05$.

2.6. Ethical Considerations

Confidentiality and anonymity of participants were respected in accordance with ethical principles. Written informed consent was obtained from all participants before examination. The protocol was approved by the Ethics Committee of the Faculty of Health Sciences of the University of Lomé and by the Health Research Bioethics Committee.

3. Results

3.1. Sociodemographic Characteristics

Of the 4300 eligible individuals selected, 4290 were examined, yielding a response rate of 99.8%. Women accounted for 63.8% of the sample. The mean age was 63.1 ± 10.4 years, with participants aged 50 - 59 years constituted the largest age group

(42.0%) (Table 1).

3.2. Prevalence of Near Vision Impairment

The overall prevalence of near vision impairment was 81.9% (95% CI: 80.7 - 83.0). Prevalence was significantly higher among women than men (86.1% vs 74.6%; $p < 0.001$) (Table 2).

Table 1. Sociodemographic characteristics of participants aged 50 years and older.

Variable	n	%
Sex		
Female	2738	63.8
Male	1552	36.2
Age group (years)		
50 - 59	1801	42.0
60 - 69	1330	31.0
70 - 79	752	17.5
≥ 80	407	9.5
Total	**4290**	**100**

Table 2. Prevalence of near vision impairment by sex.

	n	n with NVI	Prevalence (%)
Female	2738	2357	86.1
Male	1552	1158	74.6
Total	**4290**	**3515**	**81.9**

NVI = Near Vision Impairment.

3.3. Access to Near-Vision Correction

Among the 4290 participants, 18.3% (n = 784) owned near-vision spectacles. A total of 3506 participants did not have near-vision spectacles at the time of the survey, including 3474 who reported having never worn near-vision spectacles in their lifetime and 32 who reported having worn them at least once. Among participants who had never worn near-vision spectacles (n = 3474), the main reasons for non-use were lack of perceived need (63.1%), financial constraints (20.9%), and unavailability of spectacles (16.0%) (Table 3).

Socioeconomic Status of Participants with Near Vision Impairment

Among participants with near vision impairment, 78.1% reported that household food supply was just adequate and 19.8% reported inadequate food supply. Regarding household income, 57.4% reported insufficient income, while only 3.1% reported sufficient income with the ability to save (Table 4).

Table 3. Access to near-vision correction and reasons for non-use. Participants aged ≥ 50 years (n = 4290).

Variable	n	%
Ownership of near-vision spectacles		
Own near-vision spectacles	784	18.3
Do not own near-vision spectacles	3506	81.7
Among participants without spectacles (n = 3506)		
Never used near-vision spectacles	3474	99.1
Used near-vision spectacles at least once	32	0.9
Reasons for non-use among never-users (n = 3474)		
No perceived need	2193	63.1
Not affordable	727	20.9
Not available	554	16.0
Reasons for non-use among prior users (n = 32)		
Lost/broken	16	50.0
Not available	9	28.1
No perceived need	7	21.9

Table 4. Household socioeconomic status among participants with near vision impairment.

Household status	n	%
Food more than adequate	74	2.1
Food just adequate	2747	78.1
Food less than adequate	694	19.8

4. Discussion

This study demonstrates an extremely high prevalence of near vision impairment (NVI) among adults aged 50 years and older in northern Togo. The observed prevalence (81.9%) is higher than that reported in several studies conducted in Asia and other African settings. In India, Marmamula *et al.* reported a prevalence of near vision impairment of 58.3% among adults aged 40 years and older, with more than half of affected individuals owning near-vision spectacles [12]. These differences likely reflect better access to eye care services, improved availability of affordable spectacles, and greater awareness of presbyopia in those settings.

The higher prevalence of near vision impairment among women observed in this study is consistent with findings from previous studies, which have shown that women are disproportionately affected by visual impairment [13]. This disparity may be explained by longer life expectancy among women, as well as greater socioeconomic and cultural barriers limiting access to eye care services.

Access to near-vision correction was extremely limited in the present study, de-

spite the simplicity and low cost of presbyopia correction. Similar barriers have been described in other low-income settings, where lack of perceived need, financial constraints, and limited availability of spectacles are the main reasons for non-use [12] [14]. These findings underscore the persistent inequities in access to basic eye care services in low- and middle-income countries. Studies evaluating awareness and perception of presbyopia have also shown that many adults do not recognize presbyopia as a treatable condition, which contributes to the low uptake of near-vision correction [15]. Population-based epidemiological analyses further confirm that uncorrected presbyopia remains highly prevalent, particularly in low-resource settings where access to refractive services is limited [16].

At the global level, recent analyses of effective refractive error coverage have demonstrated substantial inequalities in access to refractive services, with near-vision correction coverage remaining significantly lower in low-income regions compared with high-income countries [17]. Comparable findings have been reported in several population-based studies conducted in sub-Saharan Africa. Surveys assessing near vision impairment and presbyopia have consistently shown high prevalence and very low spectacle coverage across the region. These studies highlight that uncorrected presbyopia remains one of the most common causes of functional visual impairment in African populations, particularly among older adults and rural communities [18].

The strong association between near vision impairment and household socioeconomic vulnerability observed in this study highlights the role of poverty as a key determinant of uncorrected visual impairment. Previous studies have consistently shown that low income and food insecurity are major barriers to accessing eye care services in sub-Saharan Africa [19] [20]. Addressing near vision impairment, therefore, requires not only clinical interventions but also policies aimed at improving financial protection and accessibility within primary health care systems.

In line with the World Health Organization's World Report on Vision, the findings of this study support the integration of near-vision services into primary eye care and the scaling up of affordable spectacle provision as part of universal health coverage efforts [9] [10].

The cross-sectional design limits causal inference. In addition, socioeconomic data were self-reported. However, the standardized RAAB methodology ensures good representativeness and comparability of results.

5. Conclusion

Near vision impairment affects more than four out of five adults aged 50 years and older in northern Togo. The high burden, combined with limited access to near-vision correction and widespread socioeconomic vulnerability, underscores the urgent need to strengthen integrated and affordable eye care services.

Author's Contributions

All authors participated in drafting and revising the manuscript and approved the

final version.

Funding

The survey was conducted under the supervision of the National Eye Health Program and funded by the German Cooperation (BMZ) and Christian Blind Mission (CBM).

Acknowledgements

The authors thank the National Eye Health Program, field teams, and participating communities.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] United Nations (2019) World Population Ageing 2019. United Nations. https://digitallibrary.un.org/record/3907988/files/WorldPopulationAgeing2019-Report.pdf

[2] United Nations (2019) World Population Prospects 2019. United Nations. https://www.un.org/development/desa/pd/news/world-population-prospects-2019-0

[3] Prince, M.J., Wu, F., Guo, Y., Gutierrez Robledo, L.M., O'Donnell, M., Sullivan, R., *et al.* (2015) The Burden of Disease in Older People and Implications for Health Policy and Practice. *The Lancet*, **385**, 549-562. https://doi.org/10.1016/s0140-6736(14)61347-7

[4] Bourne, R.R.A., Flaxman, S.R., Braithwaite, T., *et al.* (2021) Magnitude, Temporal Trends, and Projections of the Global Prevalence of Blindness and Distance and Near Vision Impairment. *The Lancet Global Health*, **9**, e130-e143. https://pubmed.ncbi.nlm.nih.gov/28779882/

[5] World Health Organization (2015) Global Report on Ageing and Health. WHO. https://www.who.int/publications/i/item/9789241565042

[6] Crews, J.E. and Campbell, V.A. (2004) Vision Impairment and Hearing Loss among Community-Dwelling Older Americans: Implications for Health and Functioning. *American Journal of Public Health*, **94**, 823-829. https://doi.org/10.2105/ajph.94.5.823

[7] Flaxman, S.R., Bourne, R.R.A., Resnikoff, S., *et al.* (2017) Global Causes of Blindness and Distance Vision Impairment 1990-2020: A Systematic Review and Meta-Analysis. *The Lancet Global Health*, **5**, e1221-e1234. https://pubmed.ncbi.nlm.nih.gov/29032195/

[8] World Health Organization (2019) International Classification of Diseases, 11th Revision (ICD-11). WHO. https://www.who.int/standards/classifications/classification-of-diseases

[9] World Health Organization (2019) World Report on Vision. WHO. https://www.who.int/publications/i/item/world-report-on-vision

[10] International Centre for Eye Health (2025) Rapid Assessment of Avoidable Blindness Report: Qatar (2023). London School of Hygiene & Tropical Medicine RAAB Repository.

[11] Programme National de Santé Oculaire (PNSO) (2014) Rapid Assessment of Avoidable Blindness Survey, Togo 2014. Ministry of Health.

[12] Marmamula, S., Keeffe, J., Challa, R., Mohd, J. and Khanna, R.C. (2021) Near-Vision Impairment and Effective Near-Vision Spectacle Coverage in Two Districts in Telangana, India: A Population-Based Cross-Sectional Study. *BMJ Open*, **11**, e047131. https://doi.org/10.1136/bmjopen-2020-047131

[13] Lewallen, S. and Courtright, P. (2002) Gender and Use of Cataract Surgical Services in Developing Countries. *Bulletin of the World Health Organization*, **80**, 300-303. https://pubmed.ncbi.nlm.nih.gov/12075366/

[14] Blanchet, K., Gilbert, C. and de Savigny, D. (2014) Rethinking Eye Health Systems to Achieve Universal Coverage: The Role of Research. *British Journal of Ophthalmology*, **98**, 1325-1328. https://doi.org/10.1136/bjophthalmol-2013-303905

[15] Alsaqr, A.M., Alasmi, A.M., Fagehi, R. and Ali, A. (2024) Perception and Awareness of the Public about Presbyopia and Its Corrective Approaches in Saudi Arabia: A Population-Based Survey. *BMC Public Health*, **24**, Article No. 1950. https://doi.org/10.1186/s12889-024-19508-4

[16] Li, Y., Hu, Q., Wang, B., Luo, X., Zhang, M., Su, S., *et al.* (2026) Prevalence and Associated Factors of Uncorrected Presbyopia among Adults in Cross-Sectional Fujian Eye Study. *Frontiers in Medicine*, **13**, Article ID: 1745527. https://doi.org/10.3389/fmed.2026.1745527

[17] Bourne, R.R.A., Cicinelli, M.V., Selby, D.A., *et al.* (2025) Effective Refractive Error Coverage in Adults: A Systematic Review and Meta-Analysis of Updated Estimates from Population-Based Surveys in 76 Countries Modelling the Path towards the 2030 Global Target. *The Lancet Glob Health*, **13**, e1396-e1405. https://pubmed.ncbi.nlm.nih.gov/40414243/

[18] Vision Loss Expert Group of the Global Burden of Disease Stu, and the GBD 2019 Blindness and Vision Impairment Collaborators (2025) Prevalence of Blindness and Visual Impairment in Sub-Saharan Africa in 2020: Magnitude and Temporal Trends. Systematic Review and Meta-Analysis. *Ophthalmic Epidemiology*, **33**, 43-53. https://doi.org/10.1080/09286586.2025.2474654

[19] Ramke, J., Evans, J.R. and Habtamu, E. (2022) Grand Challenges in Global Eye Health: A Global Prioritisation Process Using Delphi Method. *The Lancet Healthy Longevity*, **3**, e31-e41. https://pubmed.ncbi.nlm.nih.gov/35028632/

[20] Kuper, H., Polack, S. and Limburg, H. (2006) Rapid Assessment of Avoidable Blindness. *Community Eye Health*, **19**, 68-69. https://pmc.ncbi.nlm.nih.gov/articles/PMC1871676/