Profiling Visual Health of Young Adults in Ghana: A University-Based Eye Screening Survey

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ARTICLE INFORMATION

Article title

Profiling Visual Health of Young Adults in Ghana: A University-Based Eye Screening Survey

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Keywords

Eye screening, Visual health, University students, Refractive error, Ghana, Ocular health data

Abstract

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This article describes a consolidated dataset derived from a two-year university-based eye screening program conducted between 2024 and 2025 in Ghana. The purpose of the study was to establish a baseline dataset from routinely collected eye screening data to support future analyses of ocular health patterns among young adults in Ghana. The dataset comprises anonymized self-reported questionnaire responses and corresponding clinical eye examination findings from 2,493 first-year university students aged 18 years and above who completed both components of the screening. Questionnaire data captured demographic characteristics, visual symptoms, spectacle use, digital device exposure, and self-reported ocular history, while clinical data include visual acuity measurements, refractive findings, binocular vision assessments, ocular motility, pupillary responses, confrontational visual fields, anterior and posterior segment findings, intraocular pressure measurements, and screening outcomes. All data are provided in a single spreadsheet file in raw format, with each entry representing a participant with a unique anonymized identifier. No personally identifiable information is included. The dataset is publicly available via Mendeley Data and is intended to support secondary analyses, method development, and comparative studies in vision science, public health, and ophthalmic research, particularly within low-resource and university screening settings.

SPECIFICATIONS TABLE

Subject	Health Sciences, Medical Sciences & Pharmacology
Specific subject area	Optometry; Public Health
Type of data	Questionnaire data, clinical examination data, tabulated datasets (raw format)
Data collection	Data was acquired through structured online questionnaires and standardized clinical eye examinations conducted during on-campus eye screening exercises. Clinical assessments included visual acuity testing, binocular vision assessment, ocular health examination, intraocular pressure measurement, and objective refraction.
Data source location	University of Cape Coast, Cape Coast, Ghana
Data accessibility	Repository name: Mendeley Data Data identification number: DOI: 10.17632/mfv6sb5wyc.6 Direct URL to data: https://data.mendeley.com/datasets/mfv6sb5wyc/6
Related research article	None

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VALUE OF THE DATA

- The dataset provides comprehensive baseline ocular, visual, and binocular vision data for first-year university students in Ghana, a population that is underrepresented in global vision health datasets.
- The inclusion of detailed questionnaire data alongside standardized clinical eye examination findings allows for secondary analyses exploring associations between visual function, ocular health, digital device use, educational background, and self-reported ocular symptoms in young adults.
- The data can be reused to inform the planning, implementation, and evaluation of university-based eye screening programs and preventive eye care services in low- and middle-income (LMIC) settings.
- The dataset enables comparative analyses with similar student or young adult eye health datasets from other regions, supporting cross-population and cross-cultural research in ocular epidemiology.
- The publicly available dataset may support future research and/or machine learning model development on early indicators of refractive error, binocular vision anomalies, and glaucoma-related risk markers in asymptomatic young adult populations.

BACKGROUND

University-based eye screening programs provide a valuable opportunity to generate population-level ocular health data among young adults, a group that is often assumed to be visually healthy and therefore underrepresented in routine eye care statistics (Friedman et al., 2013). First-year university students, in particular, experience significant transitions in visual demands, including increased near work, prolonged digital device use, and academic-related visual stress, which may unmask previously undetected visual or ocular conditions (Shi et al, 2018; Vidur J et al., 2022).

In many LMICs, including Ghana, access to routine comprehensive eye examinations among adolescents and young adults remains limited (Morny et al., 2019; Ocansey et al., 2014). Consequently, baseline data on visual function, binocular vision status, refractive error, and ocular health in this age group are scarce. Existing datasets from high-income settings may not adequately reflect the demographic, educational, and environmental characteristics of students in sub-Saharan Africa.

Large-scale eye screening initiatives conducted within university settings allow for the systematic collection of both self-reported and clinically measured visual and ocular health data (Höhn et al., 2015; Tissot et al., 2021). When combined with standardized examination protocols, such data can serve as a valuable resource for ocular epidemiology, visual health surveillance, public health planning, and the evaluation of institutional eye care services (Höhn et al., 2015).

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The University of Cape Coast (UCC) in Ghana, conducts a structured eye screening programme for incoming first-year students annually (Abokyi et al, 2016). The diverse demographic profile of UCC students provides a unique opportunity to explore visual health metrics in this young population and to inform policy and practice. The purpose of this study was to establish a baseline dataset from routinely collected eye screening data to support future analyses of ocular health patterns among young adults in Ghana. By making this data publicly available, we aim to support secondary analyses, cross-population comparisons, and future research focused on visual function and ocular health in young adult populations.

DATA DESCRIPTION

The dataset comprises ocular, visual, and questionnaire data as well as referral indicators (Morny et al., 2026). We carried out the data collection over two consecutive academic years (2024 and 2025) as part of institution-wide entry-level eye health screening activities.

A total of 2,493 participants who completed both a self-reported questionnaire and clinical eye examination were included in the final dataset. Each participant was assigned a unique anonymized identifier ("ID") to preserve participant confidentiality. The identifier follows an alphanumeric format (UFES/YY/XXXX), where *UFES* denotes the project name, *YY* indicates the year of screening (2024 or 2025), and *XXXX* represents the participant's sequential number in the screening register. The self-reported questionnaire responses and clinical datasets were linked using university issued student index numbers. Records could not be matched when participants completed only one component of the screening programme or when discrepancies in participant identifiers prevented successful linkage. See a breakdown of the participant flow count at each stage of the screening and survey process for the respective data collection years in Table 1. Further details about the sampling strategy, data validation and handling of missing data are provided in Section xx.

The dataset is organized into spreadsheet-compatible files (.xlsx) and supporting documentation. The uploaded files include:

1. Questionnaire instrument (PDF), containing the structured items used to collect demographic information, ocular history, visual symptoms, glaucoma awareness, and electronic device use; a summary of the corresponding questionnaire variables and data types is provided in Table 2.

2. Clinical eye examination recording sheet (PDF), detailing the standardized forms used during the screening to document visual acuity, refractive status, binocular vision tests, ocular health findings, and intraocular pressure; a summary of the corresponding clinical variables and data types is provided in Table 3.

3. Anonymized questionnaire and clinical screening dataset (Excel files, .xlsx) spreadsheets containing participant-level responses and eye-level clinical measurements. Each entry has a unique anonymized participant identifier with integrated questionnaire and clinical data for secondary analyses. A summary of the baseline characteristics of the final analytical

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dataset is presented in Table 1, while detailed descriptive statistics for selected questionnaire and clinical variables are provided in Table 4. Further details about the statistical methods are provided under the statistics section below.

In total, the dataset contains 144 columns, including demographic characteristics, medical and ocular history, visual function measures, binocular vision findings, ocular health assessments, and referral criteria indicators. All variables are accompanied by a detailed data dictionary describing variable names, definitions, and units of measurement where applicable.

Table 1. Stage count and baseline characteristics of the final analytical dataset

Stage count and baseline characteristic	2024	2025	Total
Total number of first years admitted[a], n	8,887	11,900	20,787
Participants screened during clinical examination, n	1,052	1,873	2,925
Questionnaires completed, n (Response rate %)	1,209 (13.60%)	2,516 (21.14%)	3,725 (17.92%)
Successfully matched questionnaire and clinical records/Final analytical sample, n	938	1,555	2,493
Variables with missing observations, n			3[b]
Male, n (%)	448 (47.6%)	762 (49.0%)	1,210 (48.6%)
Female, n (%)	490 (52.4%)	793 (51.0%)	1,283 (51.4%)
Age (years), median (IQR; range)	20 (19 – 21; 18 – 36)	21 (19 – 22; 18 – 38)	20 (19 – 22; 18 – 38)
Participants currently wearing spectacles, n (%)	131 (14.2%)	220 (14.1%)	352 (14.2%)
Participants ever prescribed spectacles, n (%)	231 (24.9%)	395 (25.4%)	627 (25.2%)
Participants referred for further evaluation, n (%)	606 (64.8%)	850 (54.6%)	1,456 (58.4%)

a – Source: University of Cape Coast (2025). 2025 budget highlights.
b – Missing observations occurred in three questionnaire variables: age at first schooling (12.1%), WASSCE/SSCE aggregate score (7.2%), and patient medical history (0.8%). These percentages were calculated using the final analytical sample (N = 2,493) as the denominator. Missing values were retained as blank entries, and no imputation was performed.

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Table 2. Description of questionnaire variables

Domains	Variables	Description	Data type
Unique ID	ID	Alphanumeric	String
Demographic characteristics	Gender; Age	Basic participant demographic information	Categorical; Numeric
Academic information	Age at start of schooling; WASSCE/SSCE aggregate score	Pre-university educational indicators	Numerical
Parental education	Parents' educational qualifications	Highest reported educational attainment of parents	Ordinal categorical
Parental occupation	Parents' occupational sector and occupation	Socioeconomic indicators based on parental employment	Categorical; String
Geographic information	Region of residence; Region of origin	Current and origin-based geographic location	String; Categorical
Spectacle use history	Current spectacle wear; History of spectacle prescription	Self-reported refractive correction history	Binary categorical
Eye care utilization	Time since last eye examination	Recency of prior eye examination	Categorical
Family spectacle use	Nuclear family members wearing spectacles	Family history of spectacle use	Multiple-response categorical
Medical history	Reported medical conditions	Self-reported general medical conditions	Categorical
Ocular symptom frequency	Headache, tearing, photophobia, blurred near vision, redness, itching, and eye pain.	Frequency of ocular and visual symptoms rated on a 5-point scale (0 = never to 4 = always)	Ordinal (Likert scale)
Ocular symptom severity	Same symptom categories as frequency	Severity of ocular symptoms rated on a 5-point scale (0 = none to 4 = severe)	Ordinal (Likert scale)
Glaucoma awareness	Awareness of glaucoma; Source of information	Knowledge of glaucoma and information source	Binary Categorical; Multiple response
Family history of glaucoma	Biological relatives with glaucoma	Self-reported family history	Categorical
Device use (by device)	Laptop, smartphone, tablet, television, other	Average daily hours of device use	Ordinal categorical (hours per day)
Device use (by activity)	Online classes, social media, reading, gaming	Average daily hours spent on specific activities across devices	Ordinal categorical (hours per day)

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Table 3. Description of clinical eye screening variables

Clinical domain	Variables	Description	Data type
Unaided distance VA	Snellen numerator, denominator, suffix (RE/LE)	Monocular unaided distance visual acuity recorded in structured Snellen format	Numerical; Categorical
Additional VA testing	Pinhole or +1.00 D blur test results	Supplementary VA testing for refractive assessment	Numerical; Categorical
Spectacle correction status	VA recorded with spectacles	Indicates whether habitual correction was worn during testing	Binary categorical
Objective refraction	Sphere, cylinder, axis (RE/LE)	Objective refractive error measurements	Numerical
Aided visual acuity	Aided distance VA	Visual acuity with habitual or prescribed correction	Numerical; Categorical
Amplitude of accommodation	Right and left AOA	Monocular accommodative amplitude	Numerical (dioptres)
Near point of convergence	NPC break and recovery	Binocular convergence function	Numerical (cm)
Ocular alignment	Cover test	Near ocular alignment status	Categorical
Ocular motility	Nine diagnostic gaze positions (RE/LE)	Extraocular muscle function	Categorical
Pupillary reflexes	Direct, consensual, near responses	Pupillary response assessment	Binary categorical
Confrontational visual fields	Four quadrants per eye	Gross visual field integrity	Binary categorical
External eye examination	Eyelids, lashes, conjunctiva, cornea	Anterior segment findings	Categorical
Ocular media	Anterior chamber, lens, vitreous	Media clarity and abnormalities	Categorical
Optic nerve head	CDR, cup depth, lamina cribrosa, Elschnig type	Structural optic disc parameters	Numerical; Categorical
Macular assessment	Foveal reflex	Macular integrity indicator	Binary categorical
Posterior segment comments	Free-text comments (RE/LE)	Additional retinal or optic nerve findings	String
Intraocular pressure	IOP (RE/LE) and time of measurement	Intraocular pressure measurements	Numerical; Time
Screening outcome	Pass or refer	Overall screening result	Categorical
Referral details	Reason for referral; intervention	Referral justification and immediate management	String

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Table 4. Descriptive characteristics of participants and eye-level clinical findings among first-year university students who underwent eye screening in 2024 and 2025.

Domain	Variable	2025	2024	Total
Glasses history	Currently wear spectacles, n (yes/no)	220 / 1335	132 / 804	352 / 2141
	Ever prescribed spectacles, n (yes/no)	395 / 1160	232 / 704	627 / 1866
Visual symptoms Frequency of symptom (0 = never, 4 = always)	Headaches, median (IQR)	2.00 (1.00-2.00)	1.00 (1.00-2.00)	2.00 (1.00-2.00)
	Painful eyes, median (IQR)	1.00 (0.00-2.00)	1.00 (0.00-2.00)	1.00 (0.00-2.00)
	Tearing, median (IQR)	1.00 (0.00-2.00)	1.00 (0.00-2.00)	1.00 (0.00-2.00)
	Eye strain, median (IQR)	1.00 (0.00-2.00)	1.00 (0.00-2.00)	1.00 (0.00-2.00)
	Blurred vision, median (IQR)	0.00 (0.00-1.00)	0.00 (0.00-1.00)	0.00 (0.00-1.00)
	Photophobia, median (IQR)	1.00 (0.00-2.00)	1.00 (0.00-3.00)	1.00 (0.00-2.00)
	Itching, median (IQR)	1.00 (0.00-2.00)	1.00 (0.00-2.00)	1.00 (0.00-2.00)
Visual acuity	Eyes with unaided distance VA ≤6/9, n (RE/LE)	372 (189/183)	265 (147/118)	637 (336/301)
Refractive status	Clinically significant myopia (≤ −1.00 D), n (RE/LE)	76 (37/39)	49 (26/23)	125 (63/62)
	Clinically significant astigmatism (≤ − 0.75 D), n (RE/LE)	21 (11/10)	21 (10/11)	42 (21/21)
Binocular vision	Amplitude of accommodation (D), median (IQR; range) (RE / LE)	14.00 (11.00 – 17.00; 0 – 33.00) / 14 (11.05 – 17.00; 0.00 – 33.00)	13.00 (10.00 – 17.00; 0 – 25.00) / 14 (11.00 – 17.00; 0.00 – 25.00)	14.00 (11.00 – 17.00; 0 – 33.00) / 14 (11.00 – 17.00; 0.00 – 33.00)
Ocular health	Eyes with any abnormal anterior segment findings, n	847	596	1443
	Eyes with suspicious optic discs (C/D ≥ 0.5), n (RE/LE)	680 (339/341)	404 (198/206)	1084 (537/547)
Intraocular pressure	Median IOP (mmHg), (IQR; range) (RE / LE)	15 (13 -18; 7 - 33) / 15 (13 - 18; 6 - 33)	16 (13 - 19; 7 - 58) / 16 (13 - 19; 7 - 38)	16 (13 - 18; 7 - 58) / 15 (13 - 18; 6 - 38)
	Eyes with IOP ≥ 21 mmHg, n (RE / LE)	318 (173/145)	309 (159/150)	627 (332/295)
Screening outcome	Referral for further evaluation, n (% of participants)	850 (54.6%)	607 (64.8%)	1457 (58.4%)

IQR, interquartile range; RE, right eye; LE, left eye; VA, visual acuity; D, diopters; C/D, cup-to-disc ratio; IOP, intraocular pressure. Unless otherwise stated, participant-level variables are

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based on 938 participants in 2024, 1,555 participants in 2025, and 2,493 participants overall. Eye-level variables (identified as RE/LE) are based on 1,876 eyes in 2024, 3,110 eyes in 2025, and 4,986 eyes overall. Variables reported at the eye level include visual acuity, refractive status, amplitude of accommodation, anterior segment findings, optic disc assessment, IOP pressure, and eyes with IOP ≥ 21 mmHg. Referral percentages were calculated using the number of participants as the denominator.

EXPERIMENTAL DESIGN, MATERIALS AND METHODS

Study design

This dataset was generated from a cross-sectional eye screening program conducted over two consecutive academic years among two independent annual cohorts of first-year undergraduate students in Ghana. The screening was designed to collect standardized questionnaire data and clinical eye examination data as part of an entry-level ocular health assessment.

Study setting

The eye screening was conducted on the University of Cape Coast campus as part of a broader health assessment for newly admitted students using designated screening stations. Screening was conducted at the School of Optometry and Vision Science on weekdays. On weekends, screening rotated among the University's three residential clusters (South Campus, North Campus and Far North Campus) using one centrally located hall within each cluster. Questionnaire data were collected using an online platform (Google Form®), while clinical findings were recorded on standardized paper-based clinical data collection forms. The eye screening exercise was conducted outdoors under erected canopies. Tests that would normally have been performed in the dark (ophthalmoscopy, pupillary reflex test) were conducted in an improvised curtained off area under the canopy (North and South Campus sites) or in a room where available (SOVS and Far North Campus sites).

Study population, sampling and eligibility criteria

The target population comprised first-year undergraduate students enrolled at the university during the screening periods. First year students who presented at the designated screening sites during the screening period were recruited consecutively. Inclusion criteria were enrolment as a first-year undergraduate student, age 18 years or above, provision of informed consent, and completion of both the questionnaire and clinical eye examination. First year students below 18 years and those who did not provide consent for the study were excluded, however this did not affect their right to be screened. No formal sample-size calculation was undertaken because the study was intended to curate and describe a dataset rather than test a specific hypothesis. Records from previous screening events showed that approximately 2,000 - 4,000 first-year students were screened annually. A pragmatic target of 1,000 participants was therefore selected to provide a sufficiently large dataset for descriptive and future exploratory analyses while permitting rigorous data verification and curation within the available resources.

Questionnaire data collection

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Participants completed a structured online self-administered questionnaire via Google Forms® designed to capture demographic, educational, medical, ocular, and behavioral information. The online questionnaire was completed on or before the screening day. At the screening site, paper-based forms were used to confirm demographic information and to document ocular symptoms and clinical findings. Online questionnaire responses were later merged with clinical data using university issued index number identifiers.

Questionnaire items included a combination of Categorical responses, Numerical entries, Ordinal Likert-scale ratings, and Free-text responses. Electronic validation rules were used to restrict numerical entries to predefined ranges and require the completion of specified fields. However, the mandatory-response requirement was not implemented for three questions: age at first schooling, WASSCE/SSCE aggregate scores and patient medical history. The percentage of missing data for each of the questions was 12.1%, 7.2% and 0.8% respectively. Missing values were left blank, and no imputation was performed.

Clinical examination procedures

Clinical examinations were conducted following a standardized sequence.

1. **Visual acuity assessment**

Distance visual acuity was measured monocularly for each eye using a printed Snellen chart (Canada Vision Care) positioned at a testing distance of 6 meters. The chart was inspected before each screening session to ensure legibility and appropriate positioning throughout data collection. Unaided distance visual acuity was assessed initially for all participants. For participants who habitually wore spectacles, distance visual acuity was subsequently assessed with their habitual correction. For participants with distance visual acuity of 6/6 or better, a +1.00D blur test was performed to assess latent hyperopia. For visual acuity of 6/7.5 or worse, pinhole testing was conducted to differentiate refractive from non-refractive causes of reduced vision. Visual acuity measurements were recorded using structured Snellen components (numerator, denominator, and suffix).

2. **Binocular vision and accommodative testing**

Ocular alignment was assessed using the near cover test at a working distance of 30 cm. Extraocular muscle function was evaluated using the Broad H test across the standard diagnostic positions of gaze. Near point of convergence was measured using a Royal Air Force (RAF) rule (Clement Clarke Ophthalmic, Essex, UK), with break and recovery points recorded in centimeters. Amplitude of accommodation was assessed monocularly for each eye using a RAF rule and recorded in diopters.

3. **Refraction**

Objective refractive error measurements were obtained with a close-field autorefractor (No. : 601402C, China). Three readings were taken per participant, and the automatic device generated average spherical power, cylindrical power, and axis were recorded separately for each eye. No separate quantitative assessment of within-session repeatability analysis was performed. Aided distance visual acuity were recorded where applicable.

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4. Pupillary reflexes and visual fields

Pupillary responses were assessed for direct, consensual, and near reflexes using penlight. Gross visual field integrity was evaluated using confrontational visual field testing, with stimulus detection recorded for each quadrant of the visual field for both eyes.

5. External and internal ocular examination

Anterior segment structures, including the eyelids, eyelashes, conjunctiva, cornea, anterior chamber, lens, and vitreous, were examined using a penlight and Keeler handheld ophthalmoscope (Keeler USA, Phoenixville, PA, USA) where appropriate. The ophthalmoscope was routinely checked for adequate illumination and proper functioning before each screening session with batteries replaced if necessary. Posterior segment examination was performed using the same Keeler handheld direct ophthalmoscope to assess the optic nerve head and retina. Posterior segment examination was performed through undilated pupils as part of the routine screening protocol. Recorded parameters included cup-to-disc ratio, optic cup depth, presence of lamina cribrosa, Elschnig's classification of optic nerve head appearance, foveal reflex integrity, and any additional retinal or peripheral findings.

6. Intraocular pressure measurement

Intraocular pressure was measured for each eye using an iCare rebound tonometer (iCare IC100, iCare Finland Oy, Vantaa, Finland). The tonometer was inspected and maintained in accordance with the manufacturer's recommendations before each screening session. Six consecutive measurements were obtained per eye, and the device automatically calculated and displayed the mean intraocular pressure value, which was recorded in millimeters of mercury (mmHg). The time of measurement was documented for each eye.

7. Screening outcome and referral criteria

Screening outcomes were documented for each participant based on predefined criteria. We referred participants for further clinical evaluation if any of the following were identified: (1) reduced visual acuity suggestive of refractive error, (2) presence of asthenopia symptoms, (3) elevated intraocular pressure (≥ 21 mmHg) , (4) increased cup-to-disc ratio (≥ 0.5) (Budenz et al., 2013; Foster, 2002; Ntim-Amponsah et al., 2004) or asymmetry (≥ 0.3 difference in right and left eyes) (Qiu et al., 2017), (5) optic nerve head abnormalities, and (6) retinal or posterior segment pathology. Reasons for referral and any immediate interventions provided during screening were recorded using structured text fields.

Examiner training and standardization

Clinical-year optometry students performed the screening procedures under the direct supervision of qualified optometrists. Standardized protocols were used throughout the screening period to ensure consistency across examiners and screening days. Prior to the data collection, the supervising optometrists attended a briefing session to review the protocol and data-collection form. No additional clinical training or competency assessment was undertaken for the optometrists because they were qualified practitioners. The students attended a separate one-day orientation workshop covering the screening protocol, data-collection form and recording procedures. The clinical procedures were standard techniques taught and practiced within the optometry curriculum;

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therefore, no additional procedure-specific training or formal competency assessment was conducted for the screening. All instruments used were calibrated according to manufacturer recommendations before use.

Data management and quality control

Questionnaire and clinical data were entered into electronic spreadsheets and checked for completeness and internal consistency. Data cleaning procedures included range checks, validation of categorical responses, and verification of laterality-specific variables.

The questionnaire had been used in the annual first-year eye-screening programme since 2010 and had undergone several revisions. The asthenopia symptoms section was adapted from the 10-item questionnaire described by Wajuihian (2015) and included in 2019. “Diplopia” was replaced with “missing of text lines” to capture a near-task symptom commonly reported by students attending the School’s eye clinic. A section on electronic-device use was also added.

Questionnaire revisions were conducted by a clinical team comprising qualified optometrists and lecturers to assess the relevance and coverage of the items. Before the version for this study was released, optometry interns (n = 5) completed test submissions and commented on the clarity and relevance of the questions. Ambiguorus or confusing items were revised where identified. The test runs also assessed the technical functionality of the Google Form and its data-validation settings. No other formal validity tests were undertaken.

During the screening, each completed paper form was reviewed by a qualified optometrist at the final station for completeness, correctness and consistency before the participant was either discharged or referred for further care. Clinical data recorded on paper forms were entered once into Excel by data-entry clerks. Two supervisors independently compared randomly selected electronic records (~10%) with the corresponding original paper forms and corrected identified discrepancies against the source records. Each supervisor verified records from a different set of paper forms.

All datasets were anonymized before preliminary analysis and public sharing.

STATISTICS

Descriptive statistical analyses were conducted to summarize the distribution of selected questionnaire and clinical data (Table 3). Variables are grouped according to their respective domains, including demographics, self-reported ocular history and symptoms and clinical examination findings. This preliminary analysis provides an overview of central tendency and variability within the dataset and supports data quality assessment and reuse in subsequent analytical studies.

Normality testing was conducted using Shapiro-Wilk and visual inspection. Continuous numerical data (age, IOP, amplitude of accommodation) were presented as medians, IQR and full range (minimum – maximum) since normality testing (Shapiro-Wilk) demonstrated that they were not normally distributed ($p < 0.05$). Ordinal variables were summarized as median and IQR while categorical. Categorical variables were also presented as frequencies and percentages. As this data article was intended to describe the dataset rather than test hypothesis, no further inferential statistical tests or significance tests were performed. All analyses were performed using SPSS version 26.0.

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LIMITATIONS

The following limitations should be considered when interpreting this dataset. First, the data were collected from a single university population consisting of first-year undergraduate students. This group represents a relatively young, educated population and may not reflect the ocular health profile of the broader Ghanaian population or other age groups.

Second, the dataset only includes data from students who presented at the designated screening sites during the screening period and completed both the online questionnaire and the clinical screening. This may introduce participation bias as health-conscious students or those experiencing symptoms may have been more likely to attend. Furthermore, students who did not complete either component were excluded, which may introduce selection bias. Individuals with time constraints, limited internet access, or low motivation to participate may therefore be underrepresented.

Third, the screening protocol relied primarily on rapid clinical screening techniques rather than comprehensive diagnostic examinations. For example, refractive error measurements were obtained using autorefractor readings without cycloplegia or full subjective refraction. Given the relatively young cohort, active accommodation could potentially overestimate myopia and underestimate hyperopia (Fotouhi et al., 2012). Posterior segment examination was conducted using direct ophthalmoscopy rather than fundus imaging. Consequently, subtle ocular pathologies may not have been detected.

Fourth, clinical findings were initially recorded on paper forms and later digitized. Although structured forms and verification checks were used during data entry, manual transcription may introduce minor data entry errors.

ETHICS STATEMENT

Ethical approval for this study was obtained from the University of Cape Coast ethics review committee (UCCIRB/EXT/2025/016) before commencement of data collection. The eye screening program was conducted in accordance with the principles of the Declaration of Helsinki and relevant institutional guidelines governing research involving human participants.

All participants were first-year undergraduate students who voluntarily took part in the screening program. Written informed consent was obtained from each participant before enrolment. Participants were informed about the purpose of the screening, the nature of the data being collected, the voluntary nature of participation, and their right to withdraw at any stage without academic or clinical consequences.

To protect participant confidentiality, all data were anonymized prior to analysis and public sharing. Personally identifiable information, including names, student identification numbers, and contact details, were removed from the dataset. Only anonymized data are included in the publicly available dataset.

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DATA AVAILABILITY

The dataset generated from the two-year university eye screening program is publicly available via Mendeley Data. The repository contains a single Microsoft Excel (.xlsx) file comprising consolidated anonymized questionnaire responses and clinical eye examination findings for all participants. All datasets are fully anonymized, and no personally identifiable information is included. The data are provided in raw format to allow reuse, reanalysis, and integration with other datasets.

Repository name: Mendeley Data

Dataset title: Eye screening data of first-year university students in Ghana

Data format: Microsoft Excel (.xlsx)

DOI/URL: DOI: 10.17632/mfv6sb5wyc.6 / https://data.mendeley.com/datasets/mfv6sb5wyc/6

CREDIT AUTHOR STATEMENT

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DECLARATION OF COMPETING INTERESTS

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

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