

Assessment of cataract and glaucoma knowledge, attitudes, and practices among students at the University of Mbandaka, Democratic Republic of the Congo

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ABSTRACT

Introduction

Glaucoma is a progressive optic neuropathy characterized by optic disc excavation and visual field loss, primarily due to elevated intraocular pressure. The knowledge, attitudes, and practices of the population regarding cataract are essential in strategies for blindness prevention and control.

Purpose

This study was carried out to assess the knowledge, attitudes, and practices related to cataract and glaucoma among students of the University of Mbandaka in DR Congo.

Methods

This was a cross-sectional descriptive and analytical study. Data were collected using an interview-administered questionnaire on cataract and glaucoma from 15 August to 15 November 2023. Out of 4,012 students admitted (2022–2023), 645 students agreed to participate and responded to a pre-tested structured questionnaire through face-to-face interviews. Data were entered into Excel 2010 and exported to SPSS version 21. The level of statistical significance was set at $p < .05$.

Results

Among the 645 respondents, 67.6% were men (sex ratio M/F: 2:1). The mean age of respondents was 27.4 ± 9.5 years (min–max: 18–56 years; median: 23 years). A large proportion of the respondents (60%) had good knowledge about cataract (definition, type, information); however, their knowledge about cataract complications and treatment was poor. Similarly, 60% of respondents had good knowledge about glaucoma (definition, type, information). However, a significant portion of participants had poor knowledge of glaucoma treatment (53%), lesion site (51.8%), complications (50%), and definition (37.9%). The following variables—male students, students from the medical school, and students in B2 bachelor and law faculties—were significantly associated with good knowledge of cataract and glaucoma.

Conclusion

We believe that eye care providers should make use of the good level of knowledge among students of the University of Mbandaka when planning health education campaigns related to cataract and glaucoma, as well as activities for blindness prevention in the province of Equateur.

INTRODUCTION

Cataract is a degenerative pathology of the lens, a transparent structure located in the anterior segment of the eye. The partial or complete opacification of the lens, leading to progressive vision loss or even blindness, is referred to as cataract (Alwan et al., 2017). Advanced age (>65 years) is the primary risk factor, and senile cataract is the most common form. Globally, cataract is ranked as the leading cause of blindness (Schweitzer et al., 2018).

Clinically, in its early stages, symptoms include glare, the sensation of a veil or fog, diplopia, and coloured halos around light sources. The eye remains painless and free of redness. In advanced cases of mature cataract, a white spot in the pupillary area is often observed (Crook et al., 2015). These signs are typically taught and screened for in cataract awareness and detection campaigns. The treatment for cataract is exclusively surgical.

The knowledge, attitudes, and practices (KAP) of the population regarding cataract are essential components of strategies for blindness prevention and control (Crook et al., 2015; Jonas et al., 2017).

Glaucoma is a progressive optic neuropathy characterised by optic disc excavation and visual field loss, primarily due to elevated intraocular pressure. It is a progressive optic neuropathy characterised by an enlargement of the optic disc excavation with characteristic visual field deficits. Increased intraocular pressure (>21 mm Hg) is the main risk factor (Jonas et al., 2017; American Academy of Ophthalmology, 1985). In Africa, primary open-angle glaucoma is the most common form. Worldwide, the overall prevalence is estimated at 3.05% (range: 1.69%–5.27%). Glaucoma is classified as the second leading cause of blindness and the leading cause of irreversible blindness (Tham et al., 2014).

Clinically, in its early stages, glaucoma is insidious and asymptomatic; the eye remains painless and free of redness. Generally, symptoms such as vision loss, visual field deficits, and even blindness appear late in the disease progression, leading to delayed diagnosis, treatment, and monitoring. Treatment options include intraocular pressure-lowering eye drops, laser therapy, and filtering surgery, all aimed at controlling disease progression by reducing intraocular pressure.

The KAP of the population regarding glaucoma are crucial in screening, prevention, and blindness control strategies.

These two diseases, ranked as the first and second leading causes of blindness worldwide and in Africa, including the Democratic Republic of the Congo (DRC), are relatively well known among healthcare providers but are poorly understood or not well known by the general population (World Health Organization [WHO], 2022).

In the DRC, to our knowledge, data on the level of awareness of these two diseases among urban and rural populations are neither available nor accessible. This justifies the interest of this study, which targeted students at the University of Mbandaka in the Équateur Province.

Despite efforts to strengthen human resources in eye health, many low-income countries, including the DRC, continue to suffer from a severe shortage of qualified personnel. In many African countries, there are fewer than one ophthalmologist per million inhabitants. Additionally, existing human resources are often concentrated in large urban areas, leaving rural communities with insufficient or nonexistent eye care services.

The WHO provides information on the causes of blindness, the magnitude of the problem, and prevention strategies. However, for the DRC, and particularly the Équateur Province, studies on KAP regarding blinding diseases such as cataract and glaucoma are rare and not readily accessible. This highlights the importance of evaluating the resources that can potentially be utilised for the prevention of cataract and glaucoma in the university setting of Mbandaka.

METHODS

Study Design

This was a prospective descriptive and analytical study conducted over a three-month period, from 15 August to 15 November 2023, at the University of Mbandaka.

Target Population

The study population consisted of students who were officially enrolled at the University of Mbandaka.

Sample

Out of a total of 4,012 students officially enrolled for the 2022–2023 academic year, a preferred sample size of 645 participants was selected. This was a random sampling

process, in which students from all academic years and faculties at the University of Mbandaka were included. All participants were regularly enrolled students who voluntarily agreed to respond to our survey questionnaire. The questions were stratified according to faculty.

Data Collection Instrument

Questions related to cataract and glaucoma were asked in the form of interviews, conducted in local languages or in French, to assess the knowledge, attitudes, and practices (KAP) of the students using a pre-established questionnaire. The first section focused on respondent identification (age, sex, academic year, faculty, and place of origin). The second section included nine questions assessing respondents' knowledge of cataract and glaucoma, divided into two series: Series I for cataract and Series II for glaucoma. The questions were closed-ended (yes or no), and unknown or incomplete responses were recorded as "no."

Data Processing and Analysis

Systematic data cleaning was performed using completeness and consistency tests to ensure data harmonisation and validation (World Health Organization [WHO], 2020). The completeness test ensured that all studied parameters were recorded in the appropriate module where they were eligible and not misplaced in unrelated modules. The consistency test was designed to detect inconsistencies in the collected information. Data harmonisation and validation were carried out under the supervision of a biostatistician.

After validation, data were entered and analysed using Microsoft Excel 2010 and SPSS for Windows, version 21.0. Qualitative data were represented as proportions (%), while quantitative data were expressed as means, medians, modes, and standard deviations (SD). For mean comparison tests, the significance level was set at $p < .05$. Pearson's chi-square test was used to compare participants' knowledge levels regarding cataract and glaucoma with sociodemographic variables, including sex, age, faculty, and academic year (Field, 2013).

For this study, an acceptability threshold of 60% or higher was established, meaning that a result equal to or greater than 60% was considered a well-known element among respondents.

Ethical Approval

This study adhered to the principles of the Declaration of Helsinki. Ethical approval was obtained from the local Ethics Committee for the Department of Ophthalmology (Faculty of Medicine, University of Kinshasa). Informed consent was obtained electronically prior to questionnaire completion, and all data were collected anonymously.

RESULTS

Sociodemographic Characteristics of the Study Population

This study included 645 students from the University of Mbandaka, of whom 436 (67.6%) were male and 209 were female, resulting in a male-to-female sex ratio of 2.1. The mean age of the surveyed students was 27.4 ± 9.5 years, with an age range of 18 to 56 years.

Table 1:
Sociodemographic Characteristics of the Respondents

Variables	n = 645	%
Sex		
Male	436	67.6
Female	209	32.4
Age (years)		
Mean \pm SD (Min-Max)	27.4 \pm 9.5	18-56
Median	23	
< 20	38	5.9
20-29	447	69.3
30-39	116	18.0
40-49	25	3.9
> 50	19	2.9
Faculty		
Law	39	6.6
Medicine	475	73.6
Agronomy	6	1.0
Economics	27	4.2
Environment	36	5.6
Computer Science	40	6.2
Psychology	22	3.4
Level of Study		
G1	90	14.0
G2	146	22.6
G3	126	19.5
D1	96	14.9
D2	115	17.9
D3	28	4.3
L1	17	2.6
L2	27	4.2

Knowledge of Respondents from the Faculty of Medicine

The majority of students demonstrated a high level of knowledge regarding the two investigated pathologies

across different study variables, including type (94.6%), disease information (91.1%), cause (80%), disease awareness (78.2%), affected relatives (77.5%), and definition (62.2%). However, three study parameters showed insufficient knowledge: lesion location (57.3%), treatment (51.9%), and complications (50%).

Regarding knowledge of cataracts, two variables indicated insufficient knowledge: treatment (50.9%) and (53%), lesion location (51.8%), complications (50%), and definition (37.9%).

Table 2: Distribution of Respondents According to Knowledge Levels in the Faculty of Medicine

Variables	Cataract, n=645			Glaucoma, n=645		
	No	Yes	p	No	Yes	p
Definition	144(82.9)	501(77.7)	0.062	266(41.2)	379(37.9)	0.602
Type	13(2.0)	632(98.0)	<0.001	57(8.8)	588(91.2)	<0.001
Cause	123(19.0)	522(81.0)	<0.001	109(16.9)	536(83.1)	0.043
Complication	322(50.0)	323(50.0)	1.000	322(50.0)	323(50.0)	1.000
Lesion location	240(37.2)	405(62.8)	0.031	311(48.2)	334(51.8)	0.925
Disease information	51(7.9)	594(92.1)	<0.001	64(10.0)	581(90.0)	<0.001
Knowledge of disease	152(23.6)	493(76.4)	<0.001	129(20.0)	516(80)	<0.001
Treatment	317(49.1)	328(50.9)	0.963	303(47.0)	342(53.0)	0.862
Relatives	117(18.1)	528(82.9)	0.002	173(26.4)	472(73.2)	0.006

Knowledge of Respondents from the Faculty of Law

Students from the Faculty of Law demonstrated a high level of knowledge regarding cataracts and glaucoma across various study variables, including disease information (88.5%), type (85.9%), disease awareness (80.8%), cause (71.1%), definition (67.9%), affected relatives (66.7%), and lesion location (61.5%). However, two variables indicated insufficient knowledge: complications (51.3%) and treatment (38.5%).

For cataract knowledge, insufficient knowledge was noted in complications (48.7%) and treatment (35.9%). For glaucoma, insufficient knowledge was found in cause and lesion location (59%), complications (53.8%), and treatment (41%).

Table 3: Distribution of Respondents According to Knowledge Levels in the Faculty of Law

Variables	Cataract N=39			Glaucoma N=39		
	No	Yes	p	No	Yes	p
Definition	12(30.8)	27(69.2)	0.002	13(33.3)	26(66.7)	0.007
Type	5(12.8)	34(87.2)	<0.001	6(15.4)	33(84.6)	<0.001
Cause	8(20.5)	31(79.5)	<0.001	16(41.0)	23(59.0)	0.174
Complication	20(51.3)	19(48.7)	1.000	18(46.2)	21(53.8)	0.651
Lesion location	14(35.9)	25(64.1)	0.024	16(41.0)	23(59.0)	0.174
Disease information	3(7.7)	36(92.3)	<0.001	6(15.4)	33(84.6)	<0.001
Knowledge of disease	7(18.0)	32(82.0)	<0.001	8(20.5)	31(79.5)	<0.001
Treatment	25(64.1)	14(35.9)	0.024	23(59.0)	16(41.0)	0.174
Relatives	11(28.2)	28(71.8)	<0.001	15(38.5)	24(61.5)	0.070

Knowledge of Respondents from the Faculty of Sciences (Agronomy, Economics, Environment, and Computer Science)

The majority of students demonstrated a high level of knowledge regarding cataracts and glaucoma across various variables, including disease awareness (82.6%), disease information (81.7%), type (80.3%), cause (79.4%), affected relatives and treatment (74.8%), and lesion location (60.1%). However, two variables indicated insufficient knowledge: definition (56.4%) and complications (52.8%).

Table 4: Distribution of Respondents According to Knowledge Levels in the Faculty of Sciences

Variables	Cataract, n=109			Glaucoma, n=109		
	No	Yes	p	No	Yes	p
Definition	45(41.3)	64(58.7)	0.365	50(45.9)	59(54.1)	0.921
Type	3(2.8)	106(97.2)	<0.001	40(36.7)	69(63.3)	0.063
Cause	3(2.8)	106(97.2)	<0.001	42(38.5)	67(61.5)	0.056
Complication	52(47.7)	57(52.3)	0.402	51(46.8)	58(53.2)	0.892
Lesion location	51(46.8)	58(53.2)	0.403	36(33.0)	73(67.0)	0.032
Disease information	18(16.5)	91(83.5)	0.026	22(20.2)	87(79.8)	0.028
Knowledge of disease	18(16.5)	91(83.5)	0.029	20(18.3)	89(81.7)	0.021
Treatment	26(23.9)	83(76.5)	0.022	29(26.6)	80(73.4)	0.026
Relatives	25(33.0)	84(77.0)	0.020	30(27.5)	79(72.5)	0.031

Knowledge of Respondents from the Faculty of Psychology

Most students from the Faculty of Psychology demonstrated high knowledge regarding cataracts and glaucoma across various variables, including type (90.9%), disease information (88.6%), affected relatives (81.8%), and disease awareness (65.9%).

However, five variables showed insufficient knowledge: cause and definition (56.8%), lesion location (50%), treatment (47.7%), and complications (43.2%).

Table 5: Distribution of Respondents According to Knowledge Levels in the Faculty of Psychology

Variables	Cataract, n=22			Glaucoma, n=22		
	No	Yes	p	No	Yes	p
Definition	9(40.9)	13(59.1)	1.000	10(45.5)	12(54.5)	0.032
Type	0(0.0)	22(100)	-	4(18.2)	18(81.8)	0.022
Cause	12(54.5)	10(45.5)	0.963	7(31.8)	15(68.2)	0.021
Complication	12(54.5)	10(45.5)	0.063	13(59.1)	9(40.9)	0.049
Lesion location	13(59.1)	9(40.9)	0.059	9(40.9)	13(59.1)	0.049
Disease information	2(9.1)	20(90.9)	<0.001	3(13.6)	19(86.4)	0.022
Knowledge of disease	8(36.4)	14(63.6)	0.036	7(31.8)	15(68.2)	0.021
Treatment	11(50.0)	11(50.0)	1.000	12(54.5)	10(45.5)	0.063
Relatives	3(13.3)	19(86.4)	0.023	5(22.7)	17(77.3)	0.012

DISCUSSION

Sociodemographic Characteristics of the Study Population

This study aimed to assess the level of knowledge, attitudes, and practices of students at the University of

Mbandaka from August 15 to November 15, 2023. The study population consisted of 645 regularly enrolled students, including 436 male and 209 female students. The average age was 27.4 ± 9.5 years (range: 18–56 years), with the majority in the 20–29 years age group (69.3%).

Studies in Africa and elsewhere reveal variations in mean age and age range depending on the authors. Sovogui et al. (2022) reported an average age of 41 ± 21.74 years, with a range of 18–93 years. Aboubakar et al. (2018) and Tham et al. (2014) reported that over 20% of their populations were above 60 years. In our study, the median age was 23 years, typical of university students.

Male respondents predominated (67.6%; sex ratio 2:1), similar to findings by Sovogui et al. (2022). Most respondents were from the Faculty of Medicine (73.6%), with 22.6% in the second year of the bachelor's programme, reflecting the faculty's large student body.

Knowledge of Respondents Regarding Cataracts: Attitudes and Practices

The majority of students showed good knowledge regarding disease awareness (92.1%), affected relatives (82.9%), causes (81%), definition (77.7%), general knowledge (76.4%), and lesion location (62.8%). However, knowledge about treatment (50.9%) and complications (50%) was insufficient.

Our results align with Sovogui et al. (2022), who found 69.8% could define cataracts. In our study, 50.9% knew about cataract treatment, similar to Aboubakar et al. (2018), though Sovogui et al. (2022) reported 81.9% had sufficient knowledge of treatment.

Knowledge of Respondents Regarding Glaucoma: Attitudes and Practices

Most students demonstrated knowledge of type (91.2%), disease information (90%), cause (83.1%), disease awareness (80%), and affected relatives (73.2%). However, insufficient knowledge was noted regarding treatment (53%), lesion location (51.8%), complications (50%), and definition (37.9%).

This aligns with Sovogui et al. (2022), where 41.6% recognised glaucoma as an eye disease, 9.4% defined it as increased eye pressure, and 36.9% had some knowledge. Sovogui et al. (2022) also reported 55.8% knew of surgical

treatment, 33.5% of medical treatment, and 4.5% of traditional treatments.

Overall Knowledge of Respondents Regarding Cataracts and Glaucoma

The majority demonstrated knowledge of type (94.6%), disease information (91.1%), cause (80%), disease awareness (78.2%), affected relatives (77.5%), and definition (62.2%). Knowledge was insufficient regarding lesion location (57.3%), treatment (51.9%), and complications (50%).

Students from the Faculty of Medicine showed superior knowledge, likely due to their curriculum. The most common source of information was relatives, with 77.5% knowing the need for hospital care if symptoms occurred.

CONCLUSION

This descriptive, analytical study among 645 students revealed:

- ~60% demonstrated good knowledge of cataracts and glaucoma, though gaps existed regarding treatment and complications;
- The majority knew how to respond appropriately to these conditions;
- Most had sufficient knowledge to educate others;
- Faculty of Medicine students were more knowledgeable.

A significant correlation existed between knowledge levels and socio-demographic variables (age, gender).

Authors' Contributions: Yvon Eanga Babundo Kabu: study design, data collection, interpretation, statistical analysis, manuscript writing. Tacite Kpanya Mazoba: statistical revisions, proofreading, English translation. David Kayembe Lubeji: design, supervision, manuscript writing.

Ethical Approval: Ethical approval was obtained from the local Ethics Committee for the Department of Ophthalmology (Faculty of Medicine, University of Kinshasa).

Conflicts of Interest: None declared.

ORCID iDs:

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