Scientific Research Publishing

Open Journal of Ophthalmology, 2024, 14, 93-102
https://www.scirp.org/journal/ojoph
ISSN Online: 2165-7416
ISSN Print: 2165-7408

Epidemiological, Clinical, Therapeutic and Evolutive Profile of Primary Open-Angle Glaucoma in a Cameroonian Population

Christelle Domngang[1*], Fabiola Makamwe Tagne[1], Leonard Tedong[1], Chantal Ngoune Nanfack[2], Caroline Mvilongo[2], Giles Kagmeni[2]

[1]Higher Institute of Health Sciences, Université des Montagnes, Bangangté, Cameroon
[2]Faculty of Medicine and Biomedical Sciences, University of Yaounde 1, Yaounde, Cameroon
Email: *dockrystlnoche@gmail.com

How to cite this paper: Domngang, C., Tagne, F.M., Tedong, L., Nanfack, C.N., Mvilongo, C. and Kagmeni, G. (2024) Epidemiological, Clinical, Therapeutic and Evolutive Profile of Primary Open-Angle Glaucoma in a Cameroonian Population. *Open Journal of Ophthalmology*, **14**, 93-102.
https://doi.org/10.4236/ojoph.2024.142009

Received: January 22, 2024
Accepted: March 18, 2024
Published: March 21, 2024

Abstract

Background: Sub-Saharan Africa has the highest prevalence of primary open-angle glaucoma (POAG), at 4.2%. The efficacy of medical treatment has been demonstrated and remains one of the treatments of choice for POAG. However, in sub-Saharan Africa, its effectiveness has many challenges, due to multiple factors, including cost and access to care. Thus, the present study aimed to determine the epidemiological, clinical, therapeutic and evolutive profile of primary open-angle glaucoma patients. **Methodology:** A descriptive cross-sectional study was carried out in two hospitals in western Cameroon. Epidemiological, clinical, therapeutic, and evolutionary data on intraocular pressure at one year after medical treatment were analyzed. SPSS version 23 software was used for statistical analysis, with a significant p-value set at 5%. **Results:** A total of 201 patients with POAG were included in the study. The population comprised 100 men and 101 women, with a mean age of 54 ± 12 years. At diagnosis, the mean intraocular pressure was 23.9 ± 8.70 mmHg for the right eye and 25.5 ± 9.57 mmHg for the left eye. The mean cup/disc ratio was 0.64 ± 0.2 [0.2 - 1] and 0.67 ± 0.19 [02 - 1] in the right and left eyes, respectively. Monotherapy was the most prescribed treatment [59.2%]. After one year of treatment, intraocular pressure was reduced by 15.5% with beta-blockers, 23.66% with prostaglandins, 19.11% with carbonic anhydrase inhibitors, 35, 92% with beta-blockers and carbonic anhydrase inhibitors, 25.92% with beta-blockers and prostaglandins, 48.03% with carbonic anhydrase inhibitors and prostaglandin agonists, and 38.77% with triple therapy. Taking glaucoma severity into account, a significant reduction in intraocular pressure at one year was observed in all participants [$p < 0.05$]. However, the target pressure was obtained in 47%, 20% and 14% of eyes suffering of mild, moderate, and severe grade of POAG respectively. **Conclusion:** In the present

study, there was a significant reduction in intraocular pressure after one year of medical treatment. However, the reduction in intraocular pressure does not allow the target pressure to be reached in severe forms. Thus, alternatives to the medical treatment of POAG should be discussed early in the present context.

Keywords

Primary Open-Angle Glaucoma, Medical Treatment, Intraocular Pressure, Target Intraocular Pressure

1. Introduction

Glaucoma, described as a progressive optic neuropathy, represents the third leading cause of blindness worldwide after cataract and uncorrected refractive errors [1]. A global and European prevalence of glaucoma of 4.2% and 2.93% respectively has been reported [2]. In Cameroon, glaucoma represents the leading cause of irreversible blindness, with a prevalence of 5.5%, according to Ellong *et al.* [3]. While the global prevalence of primary open-angle glaucoma (POAG) is 3.05%, it is 2.31% in Asia and 2.51% in Europe [2]. Sub-Saharan Africa has the highest prevalence of POAG, at 4.2% [4]. It varies between 4.4% and 8.2% according to Cameroonian studies [3] [5].

Although the exact etiology of POAG is not known, several risk factors have been recognized, including ocular, genetic, demographic and systemic ones [4]. Elevated intraocular pressure remains the main risk factor for the development and the progression of POAG, and the only one that can be modified [6].

The aim of glaucoma treatment is to preserve the patient's visual function and quality of life. All therapeutic modalities, as well as medical, physical and surgical, aim to reduce intraocular pressure [7]. The efficacy of medical treatment has been demonstrated, notably with beta-blockers [20% - 25% reduction], prostaglandin agonists [25% - 35% reduction] and carbonic anhydrase inhibitors [20% reduction] [8]. Moreover, its goal is to reach the target intraocular pressure that will halt the progression of glaucoma, with the fewest medications and minimum adverse effects.

According to the literature, there is a paucity of studies evaluating the effect of medical treatment in sub-Saharan African populations, although medical treatment remains the treatment of first choice despite the late diagnosis of glaucoma. Numerous challenges exist regarding its efficacy due to multiple factors, including affordability and access to care [4] [9].

Thus, the present work aimed to assess the epidemiological, clinical, therapeutic and evolutive profile of patients with POAG in two health facilities in the West Cameroon region. The results of this work will provide elements for the development of a treatment algorithm.

2. Methodology

Study design and site

A descriptive cross-sectional study was carried out at Bafoussam Regional Hospital (BRH) and *Cliniques Universitaires des Montagnes* (CUM) from June 1 to September 30, 2023. These two structures, which contain specialized eye care services, are located in the western region of Cameroon.

Ethical approval

Ethical clearance [N˚058/UdM/PR/CEAQ du 12 mai 2023] from the Institutional Ethical Committee of *Université des Montagnes* and administrative authorizations from health facilities were obtained.

Study population

The study population consisted of the records of all patients followed for POAG. The data collection period was from January 2013 to December 2022.

Inclusion criteria were: all complete medical records of patients followed for POAG and under medical treatment for at least one year during the study period.

Non-inclusion criteria were: 1) Incomplete medical records; 2) Medical records of patients who had received treatment other than medical treatment for glaucoma; 3) Records of patients under 30 years of age.

Sampling

The sample size was calculated using the Cochran formula with the use of the prevalence of POAG reported by Ellong [3]. The minimum study size was 80 participants.

Study instrument and data collection

The outcome variables were:

- comorbidities: hypertension, diabetes
- epidemioloclinical data: age, gender, intraocular pressure [IOP] by pulsed air tonometer; cup/disc ratio by retinographic examination; perimetry [Mean Deviation: MD] by Octopus 600 perimeter, glaucoma severity according to Mills criteria [10].
- therapeutic data: treatment; modalities [mono, bi or tritherapy].
- evolutive data: intraocular pressure [IOP] at one year and evaluation according to Damji criteria [10].

Statistical analysis

SPSS version 23 software was used for statistical analysis. Comparison of categorical variables was performed using the Chi-square test or Fisher's exact test for small numbers (less than 5). Quantitative variables were compared using the Wilcoxon rank-sum test when the variable had two modalities. The significance threshold was set at $p < 5\%$.

3. Results

Sociodemography

A total of 201 patients with POAG were included in the study. The hospital

prevalence of POAG was 2.04%, representing 82.6% of all glaucomas.

The population comprised 100 men and 101 women, for a sex ratio of 0.99.

The mean age of the population was 54 ± 12 years [30 - 88 years] and 25.4% [n = 51] of participants were between 60 - 69 years of age.

A family history of POAG was found in 6% of participants. Hypertension was present in 21.9% of participants (Table 1).

At the time of diagnosis, the mean intraocular pressure was 23.9 ± 8.70 mmHg for the right eye, and 25.5 ± 9.57 mmHg for the left eye. The most frequent intraocular pressure was between 31 - 40 mmHg, or 45.77% and 45.27% in the right and left eyes, respectively (Table 2).

The mean cup/disc ratio was 0.64 ± 0.2 [0.2 - 1], 0.67 ± 0.19 [02 - 1], 0.66 ± 0.7 [0.2 - 1] in the right eye, left eye and both eyes, respectively. Papillary excavation [cup/disc] was between 0.6 and 0.9 in 59.2% and 66.67% of the right and left eyes, respectively (Table 2).

Table 1. Distribution of participants according to medical history.

Variable	Number [n = 201]	Frequency [%]
Ophthalmological history		
Refractive errors	56	27.9
Cataract	22	10.9
Familial glaucoma	12	6.0
Medical History		
High Blood pressure	43	21.9
Diabetes	19	9.5

Table 2. Distribution of clinical parameters in the study population.

Variables	Effective N = 201 OD	Frequency %	Effective N = 201 OG	Frequency %
Intraocular pressure (mmHg)				
<10	1	0.5	1	0.5
10 - 20	12	5.97	21	10.45
21 - 30	81	40.3	68	33.83
31 - 40	92	45.77	91	45.27
≥41	14	6.97	19	9.45
Not measured	1	0.5	1	0.5
Cup/Disc Ratio				
0.2 - 0.5	62	30.85	51	25.37
0.6 - 0.7	75	**37.31**	64	31.84
0.8 - 0.9	44	21.89	70	**34.83**
1	16	7.96	13	6.47
Inaccessible	4	1.99	3	1.49

Treatment modalities are described in Table 3. Monotherapy was the most widely prescribed dosage [n = 119; 59.2%], followed by bitherapy [n = 77; 38.3%].

Beta-blockers were the most prescribed drugs [n = 187] to participants, followed by carbonic anhydrase inhibitors [n = 56] and prostaglandin agonists [n = 43] in monotherapy or in combination (Table 3).

After one year of treatment, intraocular pressure was reduced by 15.5% with beta-blockers, 23.66% with prostaglandins, 19.11% with carbonic anhydrase inhibitors, 35.92% with beta-blockers and carbonic anhydrase inhibitors, 25.92% with beta-blockers and prostaglandins, 48.03% with carbonic anhydrase inhibitors and prostaglandin agonists, and 38.77% with triple therapy.

In the following Table 4, the variation of the intraocular pressure has been assessed taking into account the therapeutic modality of POAG.

Table 3. Distribution of treatment modalities in the study population.

THERAPEUTIC MODALITY	n	%
MONOTHERAPY	**119**	**59.2**
Beta-blockers	105	88.23
Carbonic anhydrase inhibitors	2	1.68
Prostaglandin agonists	12	10.08
BITHERAPY	**77**	**38.3**
Beta-blockers + Carbonic anhydrase inhibitors	49	63.63
Beta-blockers + Prostaglandin agonists	26	33.76
TRITHERAPY	**5**	**2.5**
Beta-blockers + Carbonic anhydrase inhibitors + Prostaglandin agonists	5	100

Table 4. Change in intraocular pressure at 1 year according to medical treatment.

THERAPEUTIC MOLECULES	VARIABLES	PERIOD		P-VALUE
	Intraocular pressure (mmHg)	At diagnosis	After one year of treatment	
Beta-blockers	RIGHT EYE	20.9 ± 5.08	17.9 ± 5.28	<0.001
	LEFT EYE	21.6 ± 5.34	18.0 ± 4.89	<0.001
Prostaglandin agonists	RIGHT EYE	23.0 ± 4.88	18.0 ± 2.96	0.007
	LEFT EYE	23.9 ± 7.20	17.8 ± 3.66	0.019
Carbonic anhydrase inhibitors	RIGHT EYE	32.0 ± 2.40	19.2 ± 0.35	0.590
	LEFT EYE	24.5 ± 6.36	26.5 ± 2.12	0.736
Beta-blockers + Carbonic anhydrase inhibitors	RIGHT EYE	28.3 ± 10.9	18.9 ± 6.57	<0.001
	LEFT EYE	33.9 ± 11.5	20.8 ± 8.70	<0.001
Beta-blockers + Prostaglandin agonists	RIGHT EYE	23.8 ± 9.10	17.2 ± 3.79	0.002
	LEFT EYE	23.6 ± 7.01	17.9 ± 7.08	0.005
Carbonic anhydrase inhibitors + Prostaglandin agonists	RIGHT EYE	35.5 ± 9.19	16.0 ± 1.41	0.198
	LEFT EYE	23.0 ± 7.07	14.2 ± 1.63	0.316

Continued

Beta-blockers + Carbonic anhydrase inhibitors + Prostaglandin agonists	RIGHT EYE	37.1 ± 12.6	22.8 ± 11.7	0.101
	LEFT EYE	39.5 ± 14.7	24.1 ± 12.3	0.112

Table 5. Change in intraocular pressure at 1 year according to severity of POAG.

Severity of the disease		n	IOP of eyes at diagnosis	IOP at 1 year of treatment	P-value
Mild	MD < 6 dB	172	26.0 [20.0 - 43.0]	18.0 [15.0 - 24.6]	<0.001
Moderate	MD [6 dB - 12 dB]	56	27.2 [19.0 - 38.2]	17.8 [15.0 - 23.2]	<0.001
Severe	MD > 12 dB	50	34.5 [21.1 - 65.2]	19.0 [13.8 - 30.5]	<0.001

Table 6. Distribution of eyes that reached target IOP.

Severity of the disease	n	Frequency of eyes with Target IOP reached
MD < 6 dB	172	81 [47%]
MD [6 dB - 12 dB]	56	11 [19%]
MD > 12 dB	50	07 [14%]

In the case of monotherapy, a significant reduction of IOP was obtained with beta-blockers [right eye: $p < 0.001$/left eye: $p < 0.001$] and prostaglandin agonists [right eye: $p = 0.007$/left eye: $p = 0.019$].

Following bitherapy, a significant lowering of IOP was obtained with beta-blockers used in combination [association with Carbonic anhydrase inhibitors: right eye: $p < 0.001$/left eye: $p < 0.001$; association with Prostaglandin agonists: right eye: $p = 0.002$/left eye: $p = 0.005$].

The variation in intraocular pressure has been evaluated taking into account the severity of POAG as seen in **Table 5**.

The reduction in intraocular pressure at 1 year was significant irrespective of the stage of POAG [$p < 0.001$] (**Table 5**).

The target IOP was also evaluated at 1 year of diagnosis according to Damji criteria as reported in **Table 6**.

In line with Damji's criteria [11], the target pressure was achieved, in 47% [81/172] of cases in the mild form, in 19% [11/56] of cases in the moderate form, and in 14% [7/50] of cases in the severe form of POAG.

4. Discussion

The aim of this study was to describe the epidemiological, clinical, therapeutic, and evolutive characteristics of POAG.

The hospital prevalence of POAG was 2.04%. This rate is similar to the prevalence found in a previous study carried out in Cameroon reporting 2.3% [12], but lower than that the findings of Ellong *et al.* (4.4%) [3].

Arterial hypertension (21.9%) was the main comorbidity found in the present study. This could be explained by the increase in the incidence of chronic

non-transmissible diseases in Africa, which in turn would be secondary to the increase in sedentary lifestyles and changes in the population's dietary habits. This result is similar to those reported by Eballé *et al*. in 2008, who found hypertension to be the main systemic pathology, with a frequency of 17% in a population of glaucoma patients [12].

In the present series, mean intraocular pressure at the time of diagnosis was 23.9 ± 8.70 mmHg and 25.5 ± 9.57 mmHg in the right and left eyes, respectively. The hypertensive form of glaucoma was predominant among the participants. Elevated intraocular pressure is a risk factor for POAG [4]. These values are lower than those of Giles *et al*. in Cameroon, who found a mean initial intraocular pressure of 34 mmHg [13]. This difference in mean intraocular pressure could be justified by the sample of the present study composed essentially of patients who had only received a medical treatment.

Concerning monotherapy treatment, beta-blockers was the most commonly used therapeutic modality, accounting for 88.23% [105/119] of cases. In fact, beta-blockers are the molecules prescribed as first-line treatment because of their efficacy, local tolerance and affordable cost. These results are similar to those of Eballe *et al*. [12] and Sounouvou *et al*. [14] in Benin, who observed a predominance of beta-blockers use at 77% and 54%, respectively. However, Domngang *et al*., in 2023, found monotherapy, in 60% of cases, with prostaglandin agonists as the most prescribed treatment from a hospital based study carried out in an urban area in Cameroon [9].

Considering the therapeutic family prescribed, the reduction of intraocular pressure was effective [$p < 0.05$] with both monotherapy and bitherapy, excluding combinations that contain carbonic anhydrase inhibitors. The small number of participants benefiting from carbonic anhydrase inhibitors in monotherapy or bitherapy could justify our results.

The reduction of intraocular pressure at one year after medical treatment was 15.5%, 23.66% and 19.11% obtained with beta-blocker, prostaglandin agonists, and carbonic anhydrase inhibitors in montherapy respectively. This intraocular pressure lowering observed for beta-blockers and prostaglandin agonists as monotherapy is below that reported in the literature, more specifically, 20% - 25% and 25% - 35% for beta-blockers and prostaglandin agonists, respectively [8]. Poor compliance could be one explanation for the lower pressure reduction achieved in the present series.

Based on the severity of the glaucoma, a significant reduction of intraocular pressure was observed after one year of follow-up. Even in the mild stage of POAG severity, the target pressure was difficult to achieve with medical treatment based on Damji's criteria. Indeed, Damji *et al*. have developed easy-to-use criteria for determining target pressure according to the severity of POAG, setting it at 18 mmHg, 15 mmHg and 12 mmHg in mild, moderate, and advanced/severe forms, respectively [11]. The difficulty of achieving the target pressure in different stages of glaucoma in the present context questions the relevance of a systematic medical treatment as first-line therapy in Cameron's setting.

There are many challenges to overcome in the treatment of glaucoma. According to Kyari *et al*., glaucoma treatment options are limited by the low availability of drugs and equipment, the lack of adequate surgical and diagnostic skills and the high cost of treatment [4]. Domngang *et al*, reported in a study carried out in Cameroon on the management of POAG, that 61% of the annual direct cost is attributable to the purchase of antiglaucomatous drugs [9]. In addition, this study highlighted certain factors that may justify a poor compliance during medical treatment, as the low rate of patients with health insurance. However, cost containment of medical treatment and the availability of alternative techniques, as laser and surgery, would increase therapeutic possibilities. Therefore, when medical treatment does not achieve adequate intraocular pressure reduction with acceptable adverse effects, laser or incisional surgeries are indicated. According to the literature, trabeculoplasty is a relevant alternative to medical treatment in sub-Saharan Africa [15] [16]. Moreover, according to Kagmeni *et al*., the evaluation of surgical treatment as an alternative to medical treatment could be used as first-line treatment for POAG in certain contexts [13].

The main limitation of our study was incomplete medical records. However, the present work, the first of its kind in Cameroon, provides the missing evidence on the benefit of medical treatment of POAG in our context.

5. Conclusion

In this study, medical treatment is the first-line therapy for POAG in a Cameroonian population, with beta-blockers as the molecules of choice. After one year of medical treatment, there was a significant reduction in intraocular pressure. However, the reduction in intraocular pressure does not allow the target pressure to be reached in severe forms. Thus, in Cameroon's context, it would be desirable for therapeutic alternatives to be promptly discussed in advanced stages of the primary open angle glaucoma. Moreover, the control of intraocular pressure in glaucoma patients highlights the necessity of a good understanding of the different factors linked to the patient and the health system.

Conflicts of Interest

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

References

[1] Flaxman, S.R., Bourne, R.R., Resnikoff, S., Ackland, P., Braithwaite, T., Cicinelli, M. V., *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://doi.org/10.1016/S2214-109X(17)30393-5

[2] Tham, Y.C., Li, X., Wong, T.Y., Quigley, H.A., Aung, T., Cheng, C.Y. (2014) Global Prevalence of Glaucoma and Projections of Glaucoma Burden through 2040: A Systematic Review and Meta-Analysis. *Ophthalmology*, **121**, 2081-2090.

https://doi.org/10.1016/j.ophtha.2014.05.013

[3] Ellong, A., Mvogo, C.E., Bella-Hiag, A.L., Mouney, E.N., Ngosso, A. and Litumbe, C.N. (2006) La prévalence des glaucomes dans une population de Noirs camerounais. *Cahiers d'études et de recherches francophones/Santé*, **16**, 83-88.

[4] Kyari, F.F., Adekoya, B., Abdull, M.M., Mohammed, A.S. and Garba, F. (2018) The Current Status of Glaucoma and Glaucoma Care in Sub-Saharan Africa. *Asia-Pacific Journal of Ophthalmology*, **7**, 375-386.

[5] Preußner, P.R., Großmann, A., Ngounou, F., Kouogan, G. and Tamon, J. (2009) Glaucoma Screening in Western Cameroon. *Graefe's Archive for Clinical and Experimental Ophthalmology*, **247**, 1671-1675. https://doi.org/10.1007/s00417-009-1166-7

[6] Ocular Hypertension Treatment Study Group, European Glaucoma Prevention Study Group, Gordon, M.O., Torri, V., Miglior, S., Beiser, J.A., *et al.* (2007) Validated Prediction Model for the Development of Primary Open-Angle Glaucoma in Individuals with Ocular Hypertension. *Ophthalmology*, **114**, 10-19. https://doi.org/10.1016/j.ophtha.2006.08.031

[7] Bertaud, S., Aragno, V., Baudouin, C. and Labbé, A. (2019) Le glaucome primitif à angle ouvert. *La Revue de Médecine Interne*, **40**, 445-452. https://doi.org/10.1016/j.revmed.2018.12.001

[8] van der Valk, R., Webers, C.A., Schouten, J.S., Zeegers, M.P., Hendrikse, F. and Prins, M.H. (2005) Intraocular Pressure-Lowering Effects of All Commonly Used Glaucoma Drugs: A Meta-Analysis of Randomized Clinical Trials. *Ophthalmology*, **112**, 1177-1185. https://doi.org/10.1016/j.ophtha.2005.01.042

[9] Domngang, C., Maguib, P., Ngoune, C.N., Foutse, Y. and Kagmeni, G. (2023) Direct Healthcare Cost and Barriers to the Medical Management of Primary Open-Angle Glaucoma in Healthcare Facilities in Yaounde-Cameroon. *IHOPE Journal of Ophthalmology*, **2**, 57-62. https://doi.org/10.25259/IHOPEJO_16_2023

[10] Mills, R.P., Budenz, D.L., Lee, P.P., Noecker, R.J., Walt, J.G., Siegartel, L.R., *et al.* (2006) Categorizing the Stage of Glaucoma from Pre-Diagnosis to End-Stage Disease. *American Journal of Ophthalmology*, **141**, 24-30. https://doi.org/10.1016/j.ajo.2005.07.044

[11] Damji, K.F., Behki, R., Wang, L. and Target IOP Workshop Participants (2003) Canadian Perspectives in Glaucoma Management: Setting Target Intraocular Pressure Range. *Canadian Journal of Ophthalmology*, **38**, 189-197. https://doi.org/10.1016/S0008-4182(03)80060-1

[12] Eballé, A.O., Owono, D., Bella, A.L., Ebana, C., Lomg, D. and Aboutou, R. (2008) Caractéristiques cliniques et épidémiologiques du glaucome chronique à angle ouvert. *Cahiers d'études et de Recherches Francophones/Santé*, **18**, 251-255. https://doi.org/10.1684/san.2008.0095

[13] Giles, K., Christelle, D., Georges, N.T. and Wiedemann, P. (2014) Initial Treatment of Glaucoma in a Rural Eye Clinic in Cameroon: Surgery or Medications. https://www.researchgate.net/profile/Peter-Wiedemann-2/publication/268517778_Initial_Treatment_of_Glaucoma_in_a_Rural_Eye_Clinic_in_Cameroon_Surgery_or_Medications/links/5603b98208ae460e2704f450/Initial-Treatment-of-Glaucoma-in-a-Rural-Eye-Clinic-in-Cameroon-Surgery-or-Medications.pdf

[14] Sounouvou, I., Tchabi, S., Monteiro, S., Yehouessi, L., Doutetien, C. and Bassabi, S.K. (2012) Thérapeutique du glaucome primitif à angle ouvert à Cotonou: À propos de 224 cas. *Journal Français d'Ophtalmologie*, **35**, 100-105. https://doi.org/10.1016/j.jfo.2011.02.015

[15] Philippin, H., Matayan, E., Knoll, K.M., Macha, E., Mbishi, S., Makupa, A., *et al.* (2021) Selective Laser Trabeculoplasty versus 0.5% Timolol Eye Drops for the Treatment of Glaucoma in Tanzania: A Randomised Controlled Trial. *The Lancet Global Health*, **9**, e1589-e1599. https://doi.org/10.1016/S2214-109X(21)00348-X

[16] Diallo, J.W., Ahnoux-Zabsonré, A., Dolo-Traoré, M., Ilboudo, P., Sanou, J. and Méda, N. (2021) Résultats tonométriques préliminaires de la trabéculoplastie sélective au laser (SLT) chez les glaucomateux au Burkina Faso. *Journal Français d'Ophtalmologie*, **44**, 409-414. https://doi.org/10.1016/j.jfo.2020.06.039