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Review Article

Patients' Satisfaction with Glaucoma Care Services- A Systematic Review

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Abstract

Introduction*:** Glaucoma is the leading cause of irreversible blindness worldwide. Due to the chronic and blinding nature of the disease, patients require prolonged clinical care and follow up. Patients' satisfaction or dissatisfaction with care could be an important determinant to compliance and adherence to treatment to preserve visual fields and improve their quality of life. ***Purpose*:** To review existing literature on the level of patients' satisfaction with glaucoma care services. ***Methodology*:** A systematic review of literature conducted online at the three search engines: PubMed, Scopus and Web of Science using key terms: ('predictors' OR 'determinants' OR 'factors affecting' OR 'measurements' OR 'dimensions' OR 'aspects' OR 'attributes') AND ('patient satisfaction' OR 'patient experience' OR 'patient priorities' OR 'user satisfaction' OR 'customer satisfaction' OR 'consumer satisfaction') AND ('glaucoma' OR 'open angle glaucoma' OR 'angle closure glaucoma' OR 'POAG' OR 'PACG'). Quality assessment were conducted for each article and bias assessment by the principal investigator and another reviewer. ***Results: The primary search obtained 710 articles. Following review of titles and abstracts, a total of 27 publications were included in the review based on eligibility criteria. Majority of the studies had good reporting standard and external validity while there were poor scores for internal validity. Significant factors determining satisfaction and dissatisfaction were summarized. ***Conclusion:*** The patients' satisfaction with glaucoma care varies and can be affected by several factors. Some of the factors can be modified to improve better patients' experience and compliance to treatment.

Keywords: Glaucoma, blindness, patients' satisfaction, disability.

INTRODUCTION

Glaucoma is a chronic disease and the leading cause of irreversible vision loss, with an estimated 3.6 million blind cases from the disease in the year 2020 [1]. The world report on vision showed that about 7.7 million people have some degree of vision impairment or even blindness from glaucoma [2]. In addition, about 57.5 million people are affected by primary open angle glaucoma subtype, which is also commoner among blacks [3, 4]. Patients with glaucoma are constantly engulfed with the fear of blindness, anxiety and depression [5]. Due to the chronic nature of disease and potential disability, glaucoma patients may require high motivation to ensure compliance and adherence to treatments in order to preserve visual fields and improve their quality of life.

Counseling is an integral component in the management of patients with glaucoma. In conversing with glaucoma patients and their relatives, it is essential to provide basic information about glaucoma, its progression, treatment options, side effects and prognosis [6]. Having to participate in making health care choices is becoming challenging for patients because of the wide variety of diagnostic and therapeutic options available, and therefore counseling is designed to help the patient make an informed decision [7]. There is a mutual relationship of respect, trust and openness between the counsellor and the glaucoma patient. Counselling is a two way process that can only be effective when the patient is cooperative and open to the counsellor and only then shall the counsellor be a useful guide. The counselling session can be difficult in situations where information is not shared for collective decision [8]. The counselling

sessions could be in a one to one or a small group relationship, in the form of interview or question and answer sessions. Trained counsellors or paramedics such as ophthalmic nurses and other allied health workers can provide counselling for glaucoma effectively [8].

Patient satisfaction is an important indicator used for measuring quality in health care [9, 10]. The World Health Organization (WHO) defined Quality of care as the degree to which health services for individuals and populations increase the likelihood of desired health outcomes [11]. Therefore, the WHO recommended that Quality Health Services should be effective, safe, people-centred, timely, equitable, integrated and efficient [11]. However, patient satisfaction with care may be much difficult to define as it varies from one study to the other. Previous attempts defined it as the extent to which patients are happy with their healthcare, both inside and outside of the doctor's office [12]. Similarly, it was defined as whether a patient's expectations about a health encounter were met [13]. Patient satisfaction surveys are useful methods for measuring clinical outcomes, improving patient retention and managing expectations of care [9]. The results of the surveys are usually utilized by the health care settings to provide better patient experience [14]. The degree of patients' satisfaction may indirectly determine the loyalty of patients to their health care service provider and their perspective to behavioral intention [15]. In pursuit of increasing patients' satisfaction, there has been development of satisfaction surveys and different reporting protocols in structured and unstructured formats [16]. This has made assessment of satisfaction of care for a disease very complex. In addition, some survey questionnaires have not been validated for use or are not disease specific. This study was a review of literature on the glaucoma patient satisfaction surveys to determine their level of satisfaction and the factors associated in order to provide a patient-centred approach to glaucoma care. The aim of this study is to review the existing literature on the level of patients' satisfaction with glaucoma care services.

METHODOLOGY

The study was a systematic review of literature conducted online at the three search engines: PubMed, Scopus and Web of Science. The research adhered to the Tenets of Helsinki and permission for the study was granted by the Clinical Ophthalmology, School of Medical and Veterinary Sciences at The University of Edinburgh. Studies that assessed the level of satisfaction, experience or perception of patients regarding their glaucoma care were reviewed.

The primary search from the search engines resulted in a total of 710 articles. Following a review of titles and abstracts, a total of 27 publications were included in the review based on inclusion criteria. The systematic review of literature followed the guidelines of Preferred Reporting Items for Systematic Reviews and Meta Analysis (PRISMA) statement.

The search strategy was conducted in PubMed, Scopus and Web of Science in May 2021. The electronic database was searched using the following key terms identified from the title, abstract, keywords, or medical subject headings: ('predictors' OR 'determinants' OR 'factors affecting' OR 'measurements' OR 'dimensions' OR 'aspects' OR 'attributes') AND ('patient satisfaction' OR 'patient experience' OR 'patient priorities' OR 'user satisfaction' OR 'customer satisfaction' OR 'consumer satisfaction') AND ('glaucoma' OR 'open angle glaucoma' OR 'angle closure glaucoma' OR 'POAG' OR 'PACG'). The search terms were adapted from the previous review studies with a similar purpose. An additional manual search from the references of available literatures was conducted.

Extracted data was categorised as follows: authors' names, journal, publication year, country, socio-demographic factors, study design, sampling, sample size, data collection method, type of questionnaire, type of glaucoma, severity of disease, treatment offered-medical, surgical, laser, minimally invasive glaucoma surgeries; level of satisfaction, analysis and key findings.

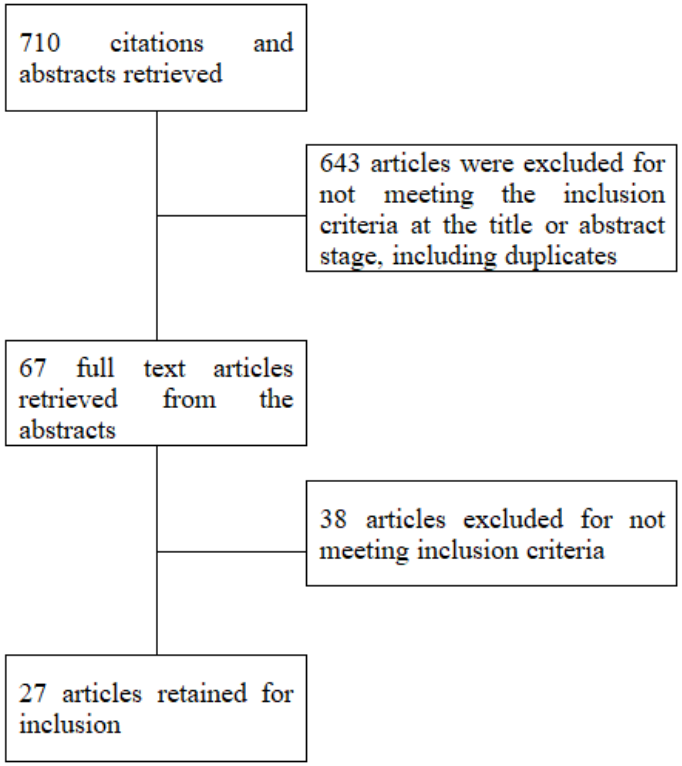
Data was extracted and placed on excel summary table. The principal investigator and another reviewer assessed the methodological quality of each article using the criteria of Downs and Black [17]. Areas of conflict were resolved by consensus.

RESULTS

Distribution of level of patients' satisfaction to glaucoma care

The patients' perspectives of satisfaction differ with experience of care, type of questionnaire and domains of care assessed (Table 1). Some of the questionnaires were validated in the past such as PSQ-18 while some were specifically designed for the study. Only one study (3.7%) was randomized controlled trial while the majority were cross-sectional studies (55.6%). Some of the questionnaires were validated in the past such as PSQ-18 while some were specifically designed for the study "New questionnaire" or not specified (29.6%). Other questionnaires used in assessing the level of satisfaction included: Department of Health Management questionnaire, QUOTE questionnaire, EDSQ questionnaire, TSS-IOP questionnaire, General Anxiety Disorder (GAD) and Patient Health Questionnaire (PHQ). Alternatively, some qualitative methods were also used such as telephone interviews, Focus Group Discussion and observation to assess the satisfaction level. Despite the validation of the glaucoma specific "Glausat questionnaire", no study was found for it's clinical use [18].

There are few literatures on glaucoma patients' perspective to care reported outside the European continent. Those reported constituted one from Nigeria (Africa), Saudi Arabia (Middle-East), India and Vietnam (Asia). In 63.0% of the studies, the type of glaucoma was not specified but a case of secondary open angle glaucoma (pseudoexfoliation syndrome) was reported (3.7%).



Flow chart of the inclusion criteria on patients' satisfaction with glaucoma care.

Table 1: Level of patients' satisfaction to glaucoma care

Author's name	Country	Mean age	Race	Study design	Sampling	Sample size	Data collection	Glaucoma type	Severity	Medical	Surgery	Laser	MIGS	Questionnaire	Satisfaction level
Nguyen Van Huy *et al*., (2017)	Vietnam	<40 = 5.2%, 40-60yrs=35.2%; >60yrs=59.6%	kinh =98%, others 2%	cross sectional	convenience	500	2016- 2017	ALL						Department of health care management's questionnaire	28.5% satisfied with accessibility to hospital services including glaucoma
Jennifer H Court *et al*., (2015)	UK	64yrs		cross sectional	consecutive	135	2013	Glaucoma; OHT; Glaucoma suspect						QUOTE questionnaire	86% satisfied with virtual clinic
Jose J. Escarce *et al*., (2003)	USA	53.9yrs		cross sectional	Telephone interview and administered questionnaires	406	1999-2000	OAG						PSQ-18	85% satisfied with access to glaucoma specialist
Valencia hui Xian Foo (2017)	Singapore	63.46 years		cross sectional	convenience	518	2014	glaucoma	Early, moderate and severe					Patient satisfaction questionnaire; General Anxiety Disorder (GAD)-7 and Patient Health Questionnaire (PHQ)-9	7.5% disaatisfied with poor counselling on investigations, treatments
Selena F. Gray *et al*., (1997)	UK	69.8yrs		RCT	Randomization	403	1997	glaucoma						New questionnaire	90% satisfied with care by optometrists

Lisa A. Hark *et al*., (2018)	USA	61.9yrs		cross sectional	Telephone interview	40	2016	glaucoma						Telephone interview	72.5% satisfied with social worker fast track
Kristen M Peterson *et al*., (2018)	USA	71.2yrs		cross sectional	convenience	110	2018	Glaucoma; OHT; Glaucoma suspect	Visual acuity, better eye VA logMAra- Visual acuity, worse eye; VA logMAra Visual field, better eye VFIb Visual field, worse eye VFIb	YES -97%	YES-33%	YES- 13%	NO	PSQ-18	92.4% satisfied- Age>70yrs, Non-European descent. Less satisfaction in higher level of education
Patrick J. G. Gunn *et al*., (2020)	UK			cross sectional	convenience	148	2018	glaucoma						Telephone interview	More likely to recommend service family members or friends. Satisfied with person conducting the test
Doaa S. Milibari *et al*., (2021)	Saudi Arabia	50yrs		prospective	consecutive	92	2014-2019	POAG, glaucoma suspect			Ahmed Glaucoma Valve			Telephone interview	67-84% satisfied with patch graft following AGV
Pierre Blondeau *et al*., (2007)	France	68.03		prospective	consecutive	100	2005-2006	glaucoma		YES	YES	YES	NO	6 item questionnaire	Excellent and 99% indicated that they would recommend the clinic to friends with glaucoma

Mario A Economou *et al*., (2018)	Sweden, Poland, france	66.6yrs		prospective multi-centre	consecutive	721	2014-2016	glaucoma	Early Moderate Severe	YES	NO	NO	NO	4 item likert questions	Satisfaction with preservative latanoprost (42.5%); and preservative free (88.9%)
David A. Belyea *et al*., (2015)	USA	63.8yrs		cross sectional	consecutive	334	2013	glaucoma	Mild Moderate Severe	marijuana	NO	NO	NO	self administered questionnaire	Satisfaction with intention to treat glaucoma with marijuana
Jean-Philippe Nordmann *et al*., (2010)	France	65.1yrs		cross sectional	consecutive	169	2010	POAG, OHT						EDSQ questionnaire	Dissatisfied with poor patient-physician relationship
DG Day *et al*., (2006)	USA	64.6yrs	Caucasian African American Hispanic	prospective cohort	consecutive	250	2006	POAG, OHT						TSS-IOP survey	Satisfiied with medications that have ease of use, effectiveness (latanoprost)
Nathan M Kerr *et al*., (2012)	New Zealand	72.1 treatment group; 71.1 -control group	New Zealand European Other	prospective cohort	convenience	2541	2012	glaucoma		Prostaglandin analogues Beta-blockers Carbonic anhydrase inhibitors Alpha agonist Miotics Adjunctive therapy				The Treatment Impact Patient Satisfaction Scale (TIPSS)	80% satisfied with medications that have ease of use, less frequent application
Chan Yun Kim *et al*., (2019)	Korea	54.8yrs		cross sectional	convenience	847	2013	glaucoma		YES				Treatment Satisfaction Questionnaire for Medication	Satisfaction in those with higher education, comorbidities.

Ontario health (2019)	Canada			Qualitative	convenience	10	2019	Glaucoma; Glaucoma relatives		3	3		4	Interview	High satisfaction with less invasive procedures such as MIGS
Bina Bhaskar Kulkarni *et al*., (2018)	UK	52-90yrs		Qualitative	convenience	45	2018	glaucoma		YES	YES	YES	YES	focus group discussion	Satisfied with being able to maintain their driving license, independent living
Andreas F. Borkenstein *et al.*, (2018)	Austria	77.9yrs		prospective	convenience	42 eyes	2017	PXF			Cataract surgery			Not specified	Patient satisfaction was very high premium acrylic IOL in pseudoexfoliation syndrome
Aachal Kotecha *et al*., (2015)	UK			Audit	convenience	1575	2014 -2015	low risk glaucoma	suspect, early, moderate					New questionnaire	Patient satisfaction with scheduled appointment and the SMS service was high
Fatima Kyari *et al*., (2016)	Nigeria	30yrs and above	Black	Qualitative	purposive	120	2012	glaucoma						Focus group discussion; in-depth interview; direct observation, exit interviews	Satisfied with a one-to-one guidance and counselling on their disease. Dissatisfied with high cost of medications.
Kamran Rahmatnejad *et al*., (2018)	USA	65.1yrs	White Black or African American Hispanic/Latino Asian American Indian or Alaska Native Multiple races Other	cross sectional	consecutive	249		glaucoma						New questionnaire	Scheduled appointments and good interpersonal relationship-completely satisfied (77.9%) or not completely satisfied (22.1%)

Hans G Lemij *et al.*, (2018)	France	18yrs and above		cross sectional	consecutive	199	2013	POAG	early, moderate, severe	YES				New questionnaire	Ocular surface disease and preserved medications- 89% expressed satisfaction compared with only 11% who professed dissatisfaction
Cecilia N Hollenhorst *et al*., (2021)	USA			Pilot	consecutive	38		glaucoma		YES				New questionnaire	95% satisfied with personalized education
Vijaya K Gothwal *et al*., (2021)	India	22.5		cross sectional	consecutive	82		primary congenital glaucoma			YES			5-item Satisfaction with Life Scale (SWLS) in the clinic visit	Higher satisfaction with marital status, higher education
Emily K Tam *et al*., (2021)	USA			cross sectional	purposive	5		glaucoma						New questionnaire	Shared Medical Appointment improved patients' knowledge
Julia K.Polat *et al*., (2021)	USA			Pilot	consecutive	20		glaucoma						New questionnaire	High satisfaction with virtual (telegaucoma) clinics

4.2: Factors associated with patient satisfaction and dissatisfaction with glaucoma care

There were 19 identified factors associated with satisfaction while 12 others were associated with dissatisfaction from the review of literature (Table 2). Demographically, extreme of ages and males are more likely to be dissatisfied with glaucoma care. Good communication is a key determinant of several factors that included counseling, results, treatment options and complications.

Table 3: Distribution of factors associated with patient satisfaction and dissatisfaction with glaucoma care

Satisfaction	Dissatisfaction
• Female living in rural areas [19] • Non-European patients [20] • Marital status- married [21] • Higher level of education [19, 21] • Good quality of life such as ability to drive, cater for family etc [22] • Personalized patient education [23, 24, 25] • Virtual clinic patients (*teleglaucoma clinics*) [23, 26, 27] • Access to glaucoma specialist [28] • Short waiting time in clinic including optometrists' review29 • Scheduled appointments – telephone calls, shared medical appointments (SMA) [30, 31] • Social worker fast track of clinic visit [32] • Experienced technicians for investigations [33] • Preservative-free medications (latanoprost) [34, 35] • Ease of drug administration [35, 36] • Less frequent topical medications [35, 36] • Intention to treat glaucoma with marijuana [37] • Cosmesis following all forms of patch graft for Ahmed Glaucoma Valve implant [38] • Less invasive procedure such as MIGS [39] • Acrylic, hydrophobic, monofocal "premium" IOL in pseudoexfoliation syndrome [40]	• Extreme of ages (Young age, >70yrs) [20, 41] • Male gender [19, 36] • Pre-university education [42] • Poor explanation of test results [42] • Poor counseling on treatment options [42, 24] • Poor counseling on treatment complications [42] • Poor vision at presentation [42] • Low IOP [42] • Poor patient-physician relationship [20, 41] • High cost of medications [24] • Preserved medications [34, 43] • Ocular surface disease [34, 43]

DISCUSSION

Socio-demographic factors

The level of satisfaction with glaucoma care services may vary with age. Peterson *et al*., [20] showed that least level of satisfaction was seen in those over 70 years of age. Similarly, Nordman *et al*., [44] and Kerr *et al*., [36] showed that younger age group with good patient-physician relationship were more dissatisfied with their glaucoma care. The reason for this bimodal age distribution of low level of satisfaction could be that the younger age group have a longer life span and consequently disability adjusted life years while the elderly may have a severe disease or comorbidities at presentation.

Huy *et al*., [19] showed that females living in rural communities were more likely to be satisfied with glaucoma when compared to males residing in urban communities. This could be due to different perceptions of patients to the services provided by hospital given their different backgrounds. In addition, there is recognized gender inequality in accessing eye care [2] and it could be a norm in some communities to have females deprived eye care services just because they lack the financial power to do so.

Peterson *et al*., [20] showed that non-Europeans had a higher level of satisfaction than their European counterparts. In contrast, Huy *et al*., [19] also reported a low level of satisfaction with domains of care in a hospital based survey among Vietnamese population. Access to eye care is low in LMICs which may account to satisfaction with any perceived eye care rendered.

Level of education may determine the visual needs of glaucoma patients and corresponding impairment of quality of life. Huy *et al*., [19] showed that the better educated patients that access glaucoma services are more satisfied to their care. Similarly, Gothwal *et al*., [21] reported similar finding among patients with primary congenital glaucoma. In contrary, Foo *et al*., [42] has demonstrated that patients with a Pre-University education were more likely to be dissatisfied with their glaucoma care. Educated and enlightened patients may have more understanding of nature of disease, it's progression and adherence to care. Furthermore, the educated ones are more likely to consistently seek for care and adhere to their therapy which will consequentially delay progression of disease and blindness from glaucoma.

Gothwal *et al*., [21] showed that being married is significantly associated with high level of satisfaction among patients with primary congenital glaucoma. This may be due to physical and psychological support in seeking for glaucoma care, adherence to medications and follow up from their spouses. Those that are not married may have the lackadaisical attitude to seek for care.

Kulkarni *et al*., [22] showed that ability of patients to perform day-to-day tasks such as driving, cater for family etc were associated with high level of satisfaction. This demonstrates the importance of early

detection of glaucoma and intervention to be able to maintain a good quality of life. The promotion of screening of high risk groups such as first degree relatives of glaucoma patients will help to detect them early.

Severity of glaucoma

Glaucoma patients with poor vision at presentation are most likely to have a severe form of the disease as central vision is usually affected late. Foo *et al*., [42] reported that patients with poor vision at presentation and low intraocular pressure are dissatisfied with glaucoma care. Glaucoma is an irreversibly blinding disease that 'silently' impairs quality of life when detected late. Management of hypotony with its attendant complications such as maculopathy post-operatively are challenging to both the patient and the eye care provider. Thus, it may be associated with dissatisfaction.

Economou *et al*., [34] and Lemij *et al*., [43] reported that presence of comorbidities such as ocular surface disease is associated dissatisfaction to care. This problem is usually compounded with the use of topical preserved medications and in those with other comorbidities such as diabetes.

Clinic setting

Escarce *et al*., [28] showed that glaucoma patients are more satisfied with access to a glaucoma specialist. Glaucoma patients are more likely to be given the best care based on the type and severity of disease by a glaucoma specialist. Although, Gray *et al*., [29] reported good satisfaction following optometrist review. A good quality care at every stage of glaucoma management and an emphatic relationship will contribute to the good experience that the glaucoma patient may have at each clinic visit.

Glaucoma being a progressive optic neuropathy, needs regular evaluation and monitoring which could be at virtual clinics or otherwise. Court *et al*., [23] Kotecha *et al*., [26] and Polat *et al*., [27] showed that glaucoma patients were satisfied with virtual clinics and tele-consultations. This may be due to the fact that traditional glaucoma clinics are characterised by attendant high volume and prolonged sessions due to the increasing number of new and follow up cases. In addition, the follow up of glaucoma patients is for life. Rahmatnejad *et al*., [30] and Tam *et al*., [31] demonstrated that scheduled hospital visits were associated with satisfaction. This will help to reduce the waiting time in clinic, further improving patients' experience as shown by Gray *et al*., [29] With the advent of COVID-19, glaucoma patients with access to home monitoring for intraocular pressure and non-mydriatic cameras may do well with virtual tele-consultations. However, this may be difficult in developing countries where access and utilization of such gadgets is rare because of cost. Furthermore, the use of virtual clinics may limit the access to specialist care. Hark *et al*., [32] showed that fast track of clinic visit for glaucoma patients is associated with more satisfaction to care. This may be a facilitated method of reviewing patients especially in settings where there is limited access to virtual clinics or facilities for scheduled medical appointments.

Skilled workforce will likely result in a better clinic experience. Gunn *et al*., [33] reported that glaucoma patients had a better experience and satisfaction when their investigations were done by skilled technician. The art of performing gonioscopy, visual fields, optical coherence tomography etc is mastered with time. Patients with glaucoma usually undergo the learning period to be proficient in them too. Also, an emphatic approach by the technician will go a long way in easing the stress associated with the period of learning.

Counseling

Counseling forms an important component of glaucoma care, more so with the chronic nature of disease and the potential irreversible vision loss. The power of communication can not be over emphasized. Foo *et al*., [42] reported poor communication which includes poor explanation of test results, poor counseling on treatment options and complications as factors for dissatisfaction with care. Similarly, Kyari *et al*., [24] Court *et al*., [23] and Hollenhorst *et al*., [25] shows that glaucoma patients were more satisfied with one-on-one counselling and personalized education. Glaucoma patients may require multiple counselling sessions on nature of disease, treatments and complications to ensure compliance. Despite knowledge about the disease, typical glaucoma patients move for alternative eye care centres hoping for cure [24].

Foo *et al*., [42] also showed that a poor patient-physician relationship is a significant factor for dissatisfaction in glaucoma. An emphatic approach to glaucoma patients may be re-assuring and outcome driven.

Medications

In most settings, medical therapy forms the first line of care of glaucoma [45]. Economou *et al*., [34] and Day *et al*., [35] showed that glaucoma patients were more satisfied with preservative-free medications. In contrary, Economou *et al*., [34] and Lemij *et al*., [43] reported that preserved medications increased dissatisfaction with care. This may be due to the ocular surface related complications of using preserved medications over time.

Kyari *et al*., [24] showed that high cost of glaucoma medications contributes to overall expenditure of glaucoma care and it is related with poor patient experience. Low cost and effective glaucoma medications may reduce the financial burden of care.

The availability of ideal medication will be difficult as majority of glaucoma patients requires more than one medication for optimum control of intraocular pressure to halt or delay progression of disease.

Day *et al*., [35] and Kerr *et al*., [36] showed that topical medications with less frequency of administration and ease of use were associated with satisfaction. Prostaglandin analogues such as latanoprost with daily dosing will be more convenient to patient. However, they have a high attendant cost. Similarly, were more compliant to medications with less ocular side effects such as conjunctival hyperaemia [35].

Belyea *et al*., [37] showed that the perception of the fact that marijuana should be legal was associated with satisfaction and the intention to use marijuana for glaucoma treatment. This is despite the known fact that marijuana is known to have limitation in the effective treatment of glaucoma [37]. Marijuana is still not legalized in many countries and thus not readily available for therapeutics.

Surgery

The Ontario health [39] reported that patients with glaucoma would prefer a minimally invasive glaucoma surgery (MIGS) to achieve glaucoma control. This may be because of the presumed less invasive nature of the interventions than the conventional glaucoma surgeries such as trabeculectomy. However, even though associated with likelihood of satisfaction for glaucoma patients, MIGS are not suitable options for patients with advanced disease or angle closure glaucoma [46]. They are also an expensive form of treatment [46].

Milibari *et al*., [38] reported that patients that had Ahmed Glaucoma Drainage (AGV) devices had no significant difference in the cosmetic satisfaction level of the type of patch graft used (pericardium, sclera, and cornea). However, the patients were above 50 years of age and may worry less about their cosmetic outcome. Also, they had the AGV placed superiorly, which is usually well covered by the upper eyelid in the primary position of gaze. It may be more prudent to have a cost effective patch graft applied to glaucoma patients following a glaucoma drainage device implant.

The EAGLE study showed that performing a clear-lens extraction among patient with angle closure glaucoma had greater efficacy and was more cost-effective than laser peripheral iridotomy [47]. Therefore, lens extraction is considered as first-line treatment among patients with angle closure glaucoma. Patients that had multifocal intraocular lens (IOL) implanted following cataract surgery are less likely to require additional spectacles for reading but usually suffer from glare and haloes [47]. Borkenstein *et al*., [48] showed that cataract surgery with implantation of a premium acrylic IOL in pseudoexfoliation syndrome were associated with patient satisfaction. However, the use of other conventional IOL readily available and affordable was not compared in this study. So, it may be difficult to conclude on it's superiority to other alternative intraocular lenses.

Some of the limitations from this include use of non-validated, non-standardized method of assessing satisfaction with glaucoma care. Therefore, comparison between studies and individual patients was difficult. Secondly, majority of the studies had low internal validity and chances of bias was high. Generalization of results could be difficult in all settings as there were strong indications for bias.

CONCLUSION

Understanding glaucoma patients' satisfaction with care and the associated factors will help to manage patients' expectation and improve clinical experience. This is important for provision of patient-centred glaucoma services. Majority of the factors affecting patient satisfaction to glaucoma care are modifiable. Thus, there is a practical chance of augmenting clinical services to provide best approach to glaucoma management in our various settings.

Glaucoma is a chronic disease with prolonged period of follow up. Greater motivation is needed for compliance and adherence to care.

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