

Prevalent practice patterns in glaucoma: Poll of Indian ophthalmologists at a national conference

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Purpose: The aim of this study is to explore and compare the prevailing practice patterns in the diagnosis and management of glaucoma among subspecialists and general ophthalmologists in India. **Materials and Methods:** This is an interactive audience response system (ARS) based poll of ophthalmologists attending the annual conference of the Glaucoma Society of India in 2013. **Results:** The information was obtained from 379 ophthalmologists (146 glaucoma specialists, 54 nonglaucoma subspecialists, and 179 general ophthalmologists). The majority of polled ophthalmologists (236; 62%) had 10 or more years of experience in ophthalmology. The glaucoma specialists differed from nonglaucomatologists in their preference for Goldmann applanation tonometer ($P < 0.01$), four-mirror gonioscope ($P < 0.01$), Humphrey perimeter ($P < 0.01$), laser peripheral iridotomy in primary angle closure disease ($P = 0.03$), postiridotomy gonioscopy ($P < 0.01$), and usage of antifibrotic agents during filtering surgery ($P < 0.01$). Optical coherence tomography was the most preferred imaging modality and was utilized more often by the subspecialists than general ophthalmologists. The ophthalmologists also differed in their choice of antiglaucoma medications. More glaucoma specialists were performing surgery on children with congenital glaucoma ($P < 0.01$), implanting glaucoma drainage devices ($P < 0.01$), and using scientific journals to upgrade knowledge ($P = 0.03$) than the other ophthalmologists. **Conclusions:** This poll is the first of its kind in India, in its usage of the ARS, and in comparing the practice patterns of care for glaucoma among subspecialists and general ophthalmologists. It has revealed substantial diversity in a few areas among those who did and did not receive specialty training in glaucoma.

Key words: General ophthalmologists, glaucoma practice patterns, glaucoma preferred practice, glaucoma subspecialists

Modern day glaucoma management is complex and may require customized options for many. The factors that influence these decisions not only include scientific evidence and patient characteristics but also anecdotal evidence, personal preferences, level of training, and years of experience. There are guidelines issued by several national and international glaucoma associations which provide a broad framework for the patient management. While these are not set in stone, an ophthalmologist caring for someone with the condition is expected to work within that framework.

India is a large country with approximately 11.2 million persons aged 40 years and older with glaucoma. The majority of those with glaucoma are undetected, and there exist major challenges in detecting and treating these.^[1] Although the certification process to practice medicine and to become an ophthalmologist in India is stringent enough, there is very little evidence that there is uniformity or standardization in the practice of glaucoma. While data regarding practice patterns of glaucoma are available from surveys performed in the USA,^[2-7]

United Kingdom (UK),^[8,9] Australia and New Zealand,^[10] and Canada,^[11] no data originating in India has been published.

Previously conducted surveys on patterns of care provided for glaucoma have revealed that such patients may be diagnosed and managed by several categories of consultant ophthalmologists - a glaucoma specialist, a general ophthalmologist or even a nonglaucoma ophthalmic subspecialist. This was evident in the American Society of Cataract and Refractive Surgery (ASCRS) survey wherein only 9% of the members of the ASCRS were trained glaucoma specialists while the rest were general ophthalmologists.^[5] Similarly, in surveys originating in the United Kingdom and Australia and New Zealand, only 31% and 14% ophthalmologists, respectively were formally trained glaucoma specialists.^[8,10] There are a sizeable number of hospitals that provide specialist fellowship training in India, albeit most glaucoma in the country is estimated to be managed by general ophthalmologists.^[1] However, there can be differences in the care provided for glaucoma by a general

Access this article online

Website:

www.ijo.in

DOI:

10.4103/0301-4738.195004

Quick Response Code:



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Manuscript received: 06.01.16; **Revision accepted:** 12.09.16

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Cite this article as: Choudhari NS, Pathak-Ray V, Kaushik S, Vyas P, George R. Prevalent practice patterns in glaucoma: Poll of Indian ophthalmologists at a national conference. Indian J Ophthalmol 2016;64:715-21.

ophthalmologist as well as a nonglaucoma specialty trained ophthalmologist, when compared to a fellowship-trained glaucoma specialist. Nonetheless, there is virtually no literature regarding the practice patterns among nonglaucoma ophthalmic subspecialists managing glaucoma. Therefore, the objective of our unique poll was not only to study the practice pattern of glaucoma in the country but also the questionnaire administered in this survey was designed to uncover differences, if any, in the delivery of care in glaucoma by specialists, glaucoma or otherwise, as well as general ophthalmologists.

Materials and Methods

This poll of glaucoma practice patterns was conducted under the aegis of the Glaucoma Society of India (GSI); participants were the ophthalmologists attending the annual national glaucoma conference in 2013.

Development of the questionnaire

At the outset, we developed a pilot questionnaire similar to several previously conducted surveys on glaucoma practice patterns, but keeping regional differences in mind.^[2,3,5-11] This questionnaire was administered, and the responses were analyzed using an interactive audience response system (ARS) with keypads to a mixed sample of ophthalmologists attending a national meeting.^[12] This exercise was done *a priori* to ensure that the format covered all the relevant questions, was simple to answer and that the response could be accurately interpreted and analyzed. The pilot questionnaire was modified based on the feedback and was used for the current study.

Questionnaire design

The questionnaire consisted of 35 questions in multiple choice format. The first four questions were designed to ascertain the nature of training received in ophthalmology, years of experience in ophthalmology, type of practice (institutional, private, etc.), and the proportion of glaucoma patients managed in that practice. The subsequent questions concentrated on management issues these included practice patterns related to clinical diagnosis, use of investigative procedures such as visual fields and optic nerve head or retinal nerve fiber layer (RNFL) imaging, and preferences with respect to medical and surgical interventions [Online Supplementary Material]. The questionnaire was also designed to gather information on certain other topics such as patient referral to low vision service and the preferred mode of upgrading knowledge by the participants.

Administration of the questionnaire

The questionnaire was administered to the ophthalmologists attending the annual conference of the GSI held at Indore in 2013. An ARS identical to the one used in the pilot exercise was used for this poll. Participation in the poll was entirely voluntary, and there was no financial compensation for participating in it. No personal details were asked, and confidentiality of response was maintained throughout.

Statistical methods

The results were cross-tabulated by subdividing respondents with respect to experience and subspecialty training in glaucoma. Differences in categorical data were analyzed using Chi-square test or Fisher's exact test as appropriate, and the

alpha error was set at $P < 0.05$. A logistic regression model was used to study whether specialty training in glaucoma had any influence on the preferred practices in the diagnosis or management of glaucoma. The information collated is primarily descriptive. Statistical analysis was done using commercial software (Stata version 11.2; StataCorp, College Station, TX, USA).

Results

Demography

A total of 441 (68.1%) out of the 647 ophthalmology professionals registered for the meeting participated in the poll. The data obtained from 62 (14%) professionals was excluded from the analysis. Participants not entering type of ophthalmologist ($n = 25$), years of experience ($n = 27$), or type of practice ($n = 8$) were excluded; optometrists ($n = 2$) too were excluded from this study. The information obtained from the remaining 379 ophthalmologists (glaucoma specialists; $n = 146$, nonglaucoma ophthalmic subspecialists taking care of glaucoma; $n = 54$, and general ophthalmologists; $n = 179$) is being presented in this report [Fig. 1].

The majority of ophthalmologists ($n = 236$; 62.2%) had 10 or more years of experience in ophthalmology. Institutional practice was most preferred by glaucoma specialists ($n = 74$; 50.6%) when compared to nonglaucoma specialists ($n = 16$; 29.6%) or general ophthalmologists ($n = 36$; 20.1%, $P < 0.01$). Glaucoma patients made up a quarter of the outpatient case-mix for 41 nonglaucoma specialists (77.3%) and 161 general ophthalmologists (90.9%) while glaucoma patients accounted for more than half of the outpatient attendees for 57 glaucoma specialists (41.3%, $P < 0.01$).

Practice patterns related to glaucoma diagnosis

Goldmann applanation tonometry was favored by 72% glaucoma specialists ($n = 103$), 45.2% nonglaucoma specialists ($n = 24$) and 42.4% general ophthalmologists ($n = 73$, $P < 0.01$). On the other hand, noncontact tonometer was preferred by nonglaucoma specialists ($n = 14$; 26.4%) and general ophthalmologists ($n = 42$; 24.4%) when compared glaucoma specialists ($n = 25$; 17.4%, $P < 0.01$). A considerable proportion of general ophthalmologists ($n = 44$; 25.5%) continue to endorse Schiotz tonometry. A sizeable proportion across all three groups

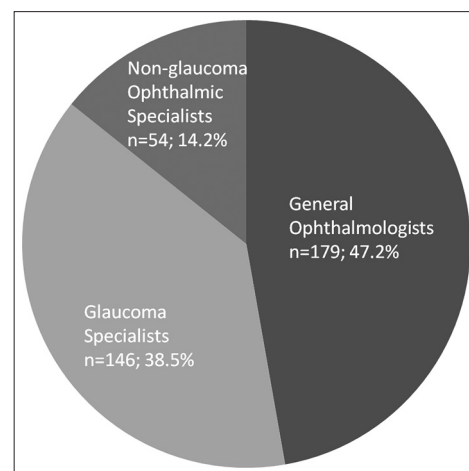


Figure 1: The subdivision of polled ophthalmologists

also reported not checking intraocular pressure (IOP) in all patients-eight glaucoma specialists (5.5%), five nonglaucoma specialists (9.4%), and ten general ophthalmologists (5.8%).

Glaucoma specialists ($n = 114$; 82.6%) outnumbered nonglaucoma specialists ($n = 21$; 45.6%) and general ophthalmologists ($n = 81$; 47.9%) in performing gonioscopy in all patients with or suspected to have glaucoma at presentation ($P < 0.01$). Similarly, less than half of the nonglaucoma specialists ($n = 24$; 48.9%) and general ophthalmologists ($n = 70$; 42.1%) reported use of the four-mirror gonioscope compared to approximately two-thirds ($n = 90$, 65.6%) of the glaucoma specialists ($P < 0.01$). Both glaucoma specialists ($n = 67$; 45.8%) and other ophthalmologists ($n = 108$; 46.3%) preferred slit-lamp biomicroscopy for optic disc examination in adult patients with glaucoma ($P = 0.93$). A third of all glaucoma specialists ($n = 42$, 32.3%) routinely obtained optic disc photographs in patients with glaucoma; the corresponding proportion of nonglaucoma specialists ($n = 14$; 26.9%) and general ophthalmologists ($n = 35$; 20.7%) was lower ($P = 0.03$).

Practice patterns related to investigations in glaucoma

The proportion of nonglaucoma specialists and general ophthalmologists together (nonglaucomatologists, $n = 147$; 63%) favoring the Humphrey perimeter was significantly less when compared to glaucoma specialists ($n = 114$; 78%, $P < 0.01$). A considerable number of general ophthalmologists ($n = 47$; 28.1%) did not have access to optic disc or RNFL imaging. A significant number of nonglaucoma specialists ($n = 26$; 48.1%) reported obtaining optic disc or RNFL imaging in more than 50% of patients with glaucoma compared to glaucoma specialists ($n = 58$; 39.7%) and general ophthalmologists ($n = 53$; 29.6%, $P = 0.02$). Optical coherence tomography (OCT) for RNFL imaging was endorsed by both glaucoma specialists (96; 65.7%) and nonglaucomatologists ($n = 147$; 63%, $P = 0.59$). Suspicious optic discs with normal visual fields was the most common indication for ordering optic disc or RNFL imaging by the majority ($n = 241$, 70.4%). While affordability was a significant determinant for imaging where general ophthalmologists were concerned, relatively greater number of subspecialists was inclined toward imaging in patients with glaucoma ($P < 0.01$). The indications for obtaining optic disc or RNFL imaging are listed in Table 1.

Practice patterns related to glaucoma management

Efficacy of antiglaucoma medication (AGM) was the basis for prescribing by a greater number of ophthalmic subspecialists ($n = 128$; 60%), while a considerable proportion of general ophthalmologists ($n = 52$; 31.7%) had greater relevance for patient affordability. However, differences in factors considered while prescribing an AGM did not reach statistical significance ($P = 0.22$, Fisher's exact test). A significantly

greater number of ophthalmic subspecialists ($n = 135$; 67.5%) prescribed prostaglandin analogs as the first line AGM in primary open angle glaucoma, when compared to general ophthalmologists ($n = 85$; 47.4%, $P < 0.01$). Similarly, prostaglandin/prostamide and beta-blocker combination was significantly preferred by ophthalmic subspecialists ($n = 97$; 48.5%) and not by general ophthalmologists ($n = 66$; 36.8%, $P = 0.02$). A considerable proportion of the latter ($n = 74$; 41.3%) preferred beta-blocker/alpha adrenergic combination. Thirty-eight (11%) ophthalmologists reported commencing antiglaucoma treatment based on an abnormal imaging technique alone; this decision did not depend on the type of training they received ($P = 0.2$). Majority ($n = 258$; 78.4%) stepped-up AGM when optic disc or visual field progression was seen and this too did not depend on the type of training in ophthalmology ($P = 0.52$).

Sixty-one (44.2%) glaucoma specialists reported that angle closure disease patients accounted for half of the attendance in outpatients department. Conversely, approximately, half of the general ophthalmologists reported taking care of <10% patients with angle closure disease in their practice. When compared to nonglaucomatologists, greater number of glaucoma specialists ($n = 117$; 92.8%) chose yttrium-aluminum-garnet (YAG) laser peripheral iridotomy (LPI) as primary treatment for angle closure disease, while a significant number of the former group ($n = 33$; 16.1%) adopted medical treatment ($P < 0.01$). Postiridotomy gonioscopy was routinely performed by 96 (70.5%) glaucoma specialists, 21 (40.3%) nonglaucoma specialists, and 58 (37.9%) general ophthalmologists, the difference being significant ($P < 0.01$). More nonglaucomatologists ($n = 96$; 53.3%) than glaucoma specialists ($n = 38$; 35.1%) were in favor of performing LPI in all primary angle closure suspects (PACS) ($P < 0.01$).

While the majority of the ophthalmologists ($n = 309$; 88.5%) preferred trabeculectomy to control primary adult glaucoma, a greater number of nonglaucomatologists ($n = 96$; 44.8%), compared to glaucoma specialists ($n = 33$; 24.4%), did not favor usage of antifibrotics during filtration surgery ($P < 0.01$). The majority of the glaucoma specialists ($n = 122$; 91%) favored Mitomycin-C (MMC) as the antifibrotic agent of choice during trabeculectomy. Glaucoma specialists significantly preferred fornix-based conjunctival flaps during trabeculectomy compared to the nonglaucomatologists ($n = 97$; 73.4% and $n = 122$; 57.5%, respectively, $P < 0.01$). In addition, glaucoma specialists favored releasable suture techniques during trabeculectomy ($n = 67$; 51.1%); this group also appeared to be the one performing more surgery in congenital glaucoma ($n = 71$; 52.5%) compared to the nonglaucoma specialists and general ophthalmologists ($n = 55$; 26.7% and $n = 49$; 23.1%, respectively, $P < 0.01$). All groups exhibited similar preference to indications

Table 1: Indications for ordering optic disc or retinal nerve fiber layer imaging by the ophthalmologists

Positive response	Glaucoma specialists (%)	Nonglaucoma specialists (%)	General ophthalmologists (%)
Indication			
Patient's affordability	7.5	17	20.8
All patients	13.6	12.7	5.5
Never	2.2	2.1	7.3
Suspicious optic disc with normal visual field	76.5	68	66.2

of combined cataract and filtering surgery, irrespective of the type of training in ophthalmology ($P = 0.08$). More glaucoma specialists ($n = 37$; 28%) were implanting glaucoma drainage devices (GDDs) compared to the other ophthalmologists [$n = 17$; 8.4%, $P < 0.01$, Table 2].

Two further questions, one related to referral to low-vision services and the other on the source of continuing medical education, were posed to the attendees. The majority of the specialists ($n = 213$; 61.5%) reported patient referral for low vision aids on the basis of activity limitation and greater number of glaucoma specialists ($n = 48$; 38.1%) reported using scientific journals to upgrade knowledge [$P = 0.03$, Table 3].

The logistic regression model identified preference for Goldmann applanation tonometer (GAT) ($P < 0.01$), four-mirror gonioscope ($P < 0.01$), Humphrey perimeter ($P < 0.01$), YAG peripheral iridotomy in primary angle closure disease ($P = 0.03$), postiridotomy gonioscopy ($P < 0.01$), and usage of antifibrotic agents during filtering surgery ($P < 0.01$) significantly different between glaucoma specialists and nonglaucomatologists. Table 4 summarizes the differences in the practice pattern of glaucoma specialists, nonglaucoma specialists, and general ophthalmologists.

Discussion

This poll was primarily designed to understand the practice patterns of diagnosis and management of glaucoma in the country. It was carried out using electronic voting pads. While the poll indicated conformance with preferred practice patterns in most areas of diagnosis and management of glaucoma by the glaucoma specialists, there was diversity in a few areas among those who did and did not receive specialist training in glaucoma.

Our poll was conducted using a novel response system, ARS with keypads. All questions were administered in the form of multiple choice and participants registered their responses live, using the voting keypad. All previous surveys

on glaucoma care have been conducted by administering paper questionnaire/s to the participants and obtaining reply by mail.^[2-11] In paper surveys, the participation rate is a major concern as low response rates may induce participant bias. The response rate has been as low as 13% as seen in the survey of the members of the ASCRS.^[5] Our response rate of 68% was a significant improvement on this. Moreover, in paper surveys, the perceived limitations on the lack of concealment of the identity of the participants can have a possible influence on the response. The key benefits for using ARS include improvements in the participation rate, attention levels, and engagement, besides anonymity of response and improvised data collection. These advantages are worth the challenges of ARS, namely, time needed to learn and set up the ARS technology, creating effective ARS questions, and ability to appropriately handle the data.^[13] *A priori* administration of a pilot questionnaire in an identical format to a smaller sample of ophthalmologists helped us circumnavigate some of these challenges.

The poll reveals varied levels of adherence to glaucoma society guidelines among glaucoma specialists and nonglaucomatologists for the diagnosis of glaucoma.^[14] The quality of evidence is high in this segment, and the recommendations are strong. Significantly, less number of nonglaucomatologists was using GAT and four-mirror gonioscope, performing gonioscopy in all patients with, or suspected to have, glaucoma at presentation, and routinely obtaining optic disc photographs in patients with glaucoma. In contrast to the segment related to the diagnosis of glaucoma, the recommendations in imaging in glaucoma are not well defined. Nevertheless, ophthalmic subspecialists were subjecting more patients to glaucoma imaging than general ophthalmologists. The ophthalmologists also differed in their choice of AGMs. The general ophthalmologists appeared to rate patient's affordability over efficacy compared to their ophthalmic subspecialty colleagues. This could also reflect the socioeconomic status of patients in their care, which was not captured in the survey. When compared to glaucoma specialists, nonglaucomatologists were also less likely to

Table 2: Type of glaucoma surgeries regularly performed by the ophthalmologists

Positive responses	Glaucoma specialists (%)	Nonglaucoma specialists (%)	General ophthalmologists (%)
Type of glaucoma surgery			
T and combined T and CS	62.8	58.7	76.9
T, combined T and CS and GDD	28	15.2	6.4
T, combined T and CS, GDD, and NPGS	5.3	4.3	2.5
Do not regularly perform	3.7	21.7	14.1

T: Trabeculectomy, CS: Cataract surgery, GDD: Glaucoma drainage device implantation, NPGS: Nonpenetrating glaucoma surgery

Table 3: Preferred mode of knowledge upgrading by the ophthalmologists

Positive responses	Glaucoma specialists (%)	Nonglaucoma specialists (%)	General ophthalmologists (%)
Mode of knowledge upgrading			
Continuing medical education	34.1	48	51.2
Internet websites	19.8	22	17
Scientific journals	38.1	18	23.4
Text books	7.9	12	8.2

Table 4: Summary of differences between glaucoma specialists, nonglaucoma ophthalmic subspecialists as well as general ophthalmologists

Positive responses	Glaucoma specialists (n=146)	Nonglaucoma specialists (n=54)	General ophthalmologists (n=179)
Institution-based practice	+		
Preference for GAT	+		
Gonioscopy at presentation in all patients with glaucoma	+		
Preference for four-mirror gonioscope	+		
Preference for slit-lamp biomicroscopy for routine disc examination	+		
Optic disc photographs in glaucoma patients	+		
Preference for Humphrey perimeter	+		
Obtaining imaging in >50% patients with glaucoma		+	
Preference for prostaglandin in POAG	+	+	
YAG PI as primary treatment for ACD	+		
Post-PI gonioscopy	+		
PI in all patients with PACS		+	+
Use of antifibrotics in T	+		
Releasable sutures during T	+		
Surgery on children with congenital glaucoma	+		
Implantation of GDD	+		
Scientific journals to upgrade knowledge	+		

All the differences were statistically significant at $P < 0.05$. +: Preference, GAT: Goldmann applanation tonometer, POAG: Primary open angle glaucoma, ACD: Anterior chamber depth, PACS: Primary angle closure suspects, GDD: Glaucoma drainage device, T: Trabeculectomy, PI: Peripheral iridotomy, YAG: Yttrium-aluminum-garnet

perform laser iridotomy in primary angle closure disease or use antifibrotics while performing filtering surgery. While the proportion of glaucoma patients managed by the nonglaucomatologist was much less compared to that by the glaucoma specialist, any ophthalmologist providing care in glaucoma is expected to adhere to the established treatment guidelines closely.

The poll also reveals areas of nonuniform adherence to glaucoma society guidelines among glaucoma specialists for the diagnosis of glaucoma. A considerable proportion of glaucoma specialists (28%) reported routinely using non-Goldmann-style applanation tonometers while 17% were using noncontact tonometry. Since IOP is the only modifiable risk factor in glaucoma, and most clinical decisions in glaucoma are dependent on IOP, the practice of using non-Goldmann-style applanation tonometers may have a significant impact in the management of glaucoma patients. Furthermore, indentation gonioscopy was revealed to be underutilized in this poll as only about 65% glaucoma specialists reported doing it. Furthermore, the guidelines additionally recommend considering serial optic nerve head photographs, and imaging, if possible, as resources vary widely across the Asia-Pacific region.^[14] Optic disc photography was carried out by a majority of glaucoma specialists in the UK^[8] and in Australia and New Zealand.^[10] In contrast, only a third of the glaucoma specialists in India obtained optic disc photographs in patients with glaucoma.

Quantitative assessment of optic disc and RNFL with imaging modalities is useful but has limited ability to pick up early disease, and the decision of initiation or reinforcement of anti-glaucoma treatment should depend on the likelihood of development of significant functional impairment during a

patient's lifetime.^[15] Therefore, the practice of initiating AGM in patients with abnormal optic disc or RNFL imaging alone, though followed by very few ophthalmologists, should be discouraged.

We noted differences in the choice of investigative or management modalities across the world regions. Currently, no specific imaging technique can be considered as the perfect reference standard for detection of glaucomatous structural progression.^[15] In our poll, OCT turned out to be the most preferred imaging modality. This is in contrast to a survey in the UK where Heidelberg retinal tomography was the most preferred optic nerve imaging modality despite better availability of OCT.^[8] The preference for OCT in our country may be linked to its wider availability and greater versatility, owing to its clinical application in other subspecialties.

The Asia-Pacific glaucoma guidelines recommend LPI in selected PACS.^[14] Even then, most ophthalmologists in Singapore (85%; no significant difference between glaucoma specialists and nonglaucomatologists)^[16] and Britain (75%)^[17] reported performing LPI for all PACS eyes. The number of ophthalmologists following such practice was relatively less in our survey (53% nonglaucomatologists and 35% glaucoma specialists). Performing LPI in all PACS eyes may not be cost-effective as many such eyes will probably never develop progressive disease.^[18] Although LPI appears relatively safe, potential adverse consequences of the procedure have been reported.^[19,20] Certainly, in countries such as India and China with populations exceeding 1 billion, mass treatment in PACS will cause significant added burden to the healthcare.

The majority of glaucoma specialists (91%) favored MMC as the antifibrotic agent of choice during trabeculectomy in our

poll. With the advent of newer and more effective AGMs, there is a shift in the profile of patients undergoing trabeculectomy toward a higher risk; glaucoma specialists preferring MMC is likely a reflection of this change. Although MMC is the most preferred antifibrotic agent in America and Japan,^[2,21] 5-fluorouracil appears to be the most preferred antimetabolite in the UK^[9] and Australia.^[22] This may be because the concerned antimetabolite surveys were done earlier, in years 2000 and 2005 respectively, or it may simply be a result of popular practice in these countries.^[9,22]

The use of GDD is on the rise, and this was evident in the survey of the American Glaucoma Society. Mean GDD usage increased from 17% in 1996 to 50% in 2008, and mean trabeculectomy usage decreased from 80% in 1996 to 45% in 2008.^[2] However, the greatest relative increase was observed in eyes with previous cataract surgery and failed trabeculectomy. This change might have been influenced by the tube versus trabeculectomy study.^[23] However, in our poll, only 28% glaucoma specialists reported doing GDD implantation. On similar lines, nearly half (49%) glaucoma specialists in Australia and New Zealand^[24] and 40% glaucoma specialists in Canada^[11] did not perform GDD implantation surgery. Moreover, 76% of GDD surgeons in Australia and New Zealand did not perceive an increase in their volume of GDD implantation over 5 years preceding their survey.^[24]

Our study has several limitations. As it was conducted at a national level glaucoma conference, the study design might have induced a bias of selecting ophthalmologists, general or otherwise, interested in glaucoma. The division of participants into glaucoma specialists, nonglaucoma ophthalmic subspecialists and general ophthalmologists was based on self-reporting. We did not collect information on the subspecialty training of the participants or their experience or time spent with glaucoma patients during training. Consequently, the ophthalmologists and the stated practice of these ophthalmologists, especially the general ophthalmologists, may not be representative of the average care delivered in glaucoma across all sectors of healthcare and society in India. We could not determine whether the responses of the nonparticipants differed from those of the participants. Moreover, a multiple choice format, as used in this study, limits the number of responses to only those offered, and the limited time allowed to answer in an ARS might lead to response mistakes. Exercises of this kind are also prone to recall bias.

Conclusion

This poll of glaucoma practice patterns at a national conference in a developing country has revealed substantial diversity in a few areas among those who did and did not receive specialist training in glaucoma. The reported information should help practicing glaucoma specialists as well as nonglaucomatologists to compare their own practice/s with those of their colleagues. This information is an important step toward the improvement of glaucoma care in India, including planning for future strategies.

Financial support and sponsorship

Alcon supported procuring of the audience response system.

Conflicts of interest

There are no conflicts of interest.

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