

An exploratory study of compliance to anti-glaucoma medications among literate primary glaucoma patients at an urban tertiary eye care center in South India

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Purpose: To understand the factors that explain compliance to anti-glaucoma medication (AGM) in terms of application, purchase, stocking and compliance behaviour. **Methods:** This was a cross-sectional study conducted in the outpatient department of an urban tertiary eye care center in South India. Interviews were completed with consenting, consecutive, literate primary glaucoma patients. The components of the questionnaire included duration, application, purchase, stocking and caregiver's role. Self-reported compliance in medication taking was tested for association with rest of the components by Chi-square test and discriminant analysis. **Results:** A total of 101 patients, aged 34–87 years, were interviewed. Majority (64.4%) were on AGM for more than two years. Early purchase was reported among 44.3% and stocking among 41.2%. Cost was high for income among 28.7%. Majority (91.1%) of them were not aware of side-effects. Fear of blindness was the major factor (68.1%) encouraging regular usage. Half (50.5%) of the patients though, still reported missing medication in the past month. Major reasons cited were relative priority (45.1%) and forgetfulness (35.3%). Self-reported compliance was not different by demographic variables or with responses to questions regarding duration ($P = 0.070$), application (0.825), time of purchase (0.272), stocking (0.598), and cost perception (0.415). **Conclusion:** Self-reporting of AGM compliance behaviour did not reflect with responses regarding application, purchase, stocking behaviour or cost perception. Awareness and knowledge of the above factors, with an aim of improving compliance by regulating counselling for even literate patients using AGM is called for.

Key words: Anti-glaucoma medication adherence, anti-glaucoma medication compliance, compliance behaviour, exploratory study on compliance to AGM among literates, glaucoma awareness profile

Glaucoma is the second leading causes of blindness worldwide.^[1] In India the prevalence of Primary Angle Closure Glaucoma (PACG) and Primary Open Angle Glaucoma (POAG) is 2.54 million and 6.48 million, respectively.^[2,3] Blindness caused by primary angle closure glaucoma (PACG) are twice than that of the number caused by primary open angle glaucoma (POAG).^[3] Glaucoma contributes to 0.6 million disability-adjusted life years (DALYs) or 1.96% of the overall burden of diseases in India.^[4] One of the major challenges in glaucoma management in the country is poor compliance to treatment, which by itself is a risk factor for progressive visual field loss.^[1] Non-compliance is a problem because it not only results in failure of a prescribed therapy to achieve its goal fully, but can also have a negative impact on therapeutic choice, leading clinicians to believe that the therapy is not working. Various barriers to compliance in anti-glaucoma medication (AGM) exist. These can be classified into provider factors, situational/environmental factors, medication regimen factors, and patient factors.^[5] Glaucoma medication compliance

can be determined using self-report, physician report, direct observation, electronic medication monitors and pharmacy data.^[6] Many studies have been conducted to assess the barriers of compliance to topical AGMs among glaucoma patients. To the best of our knowledge, there are no studies reported to understand the factors that explain compliance to patient behavior in terms of application, education on application, caregiver's role, purchase, purchase point, usage duration, stocking, cost perception, knowledge, awareness and attitude. Hence this study was conducted to develop a tool to understand, AGM compliance behaviour and to explore factors affecting AGM compliance in the Southern state of Tamil Nadu.

Tamil Nadu census population data 2011 reported a literacy rate of 80.33% in Tamil Nadu which is higher than the national average of 77.7%. Also as there are many studies from Indian population on AGM compliance from illiterate rural background but none according to our knowledge from

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literate background, the primary objective was to assess by interviewer method the application/purchase/stocking and compliance behaviour among literate primary glaucoma patients in Tamil Nadu, irrespective of whether they were from rural, semi-urban or urban areas. Secondary objective was to identify possible synergy between the application/purchase/stocking/behaviour and compliance among those literate primary glaucoma patients.

Methods

Focused group discussion was conducted among 10 primary glaucoma patients, with in-depth detailed interaction, regarding AGM compliance behaviour. Questionnaire having 42 items was then constructed based on the interactions (see Annexure 1). Components of the questionnaire involved questions pertaining to duration of AGM usage, number of AGM usage, application of AGM, education on application, purchase behaviour, stocking habits, cost perception, awareness of side effects, compliance, compliance attitude, caregiver's role in medication taking and financial dependency [Fig. 1a]. Informed written consent was obtained from all the participants willing to take part in the study. Consenting, consecutive, 101 literate primary glaucoma patients were then interviewed using the questionnaire at an urban tertiary eye care center in South-India over 15 days in June 2019. This hospital based cross-sectional study was conducted among literate primary glaucoma patients aged 30 years and above. Sample size was calculated assuming compliance to be 50% as previously reported in an Indian study.^[2] Accordingly, by using confidence interval of 95% and a margin error of 5% with nonresponse rate of 5%, sample size of 101 was selected for the study.

Patients on AGM for at least 1 month or more, for primary open angle glaucoma and primary angle closure glaucoma were included in the study. The diagnosis of primary glaucoma was confirmed by a glaucoma specialist before including them in the study. The glaucoma specialist who confirmed glaucoma clinically and the interviewer who asked the questions were two different persons. It was made mandatory that all primary glaucoma participants should be literates for inclusion into the study irrespective of their background (rural, semi-urban, or urban). The operational diagnosis of literacy was defined as the ability to read and write (Tamil or English), and/or education level greater than or equal to 12th standard grade. Secondary glaucomas, eye diseases interfering with glaucoma management, history of dementia or cognitive restrictions, coexisting psychiatric disorders, patients having a desire to keep their personal data confidential, patients who cannot recall accurately, language barriers, disability of reading and writing; and patients who did not consent were excluded. Patients who underwent glaucoma surgery but now on AGM were also excluded as this was thought to be a motivator for compliance. Informed verbal and written consent was taken from each patient participating in the survey. This survey was performed in accordance with the ethical standards laid down in the Declaration of Helsinki.

One to one in depth interview was done by the one same interviewer for all the participants. The first author (corresponding author) was the interviewer. The educational qualifications of the interviewer are Masters in Ophthalmology with a two year long term fellowship in glaucoma subspecialty. The interview took around 20 min per patient and was usually done on one

of the patient's follow-up visit before doctor consultation. The interviewer proceeded with non-leading questions in an open discussion format; to avoid leading the respondent to answer in a biased way. The interviewer also stressed on the value of precise and accurate information rather than gaining positive impression and shared the concept that failure to take medication as prescribed; due to personal, social, or economic factors is a common problem. The patient was asked in detail about his age, address, professional status, duration of the disease, duration of AGM treatment and number of AGM used. Application-related questions like whether applied by self or others, in what position was the drops applied and was the education on application taught by the doctor/paramedic staff were asked. Side effects related to the drops, knowledge about the disease, whether there is a family history of glaucoma, the last missed dose, frequency of missing a dose, purchase behaviour, purchase point, stocking habits and whether or not the patient has medical insurance were questioned in detail. If the patient applied drops regularly, then what motivated him to do so was questioned. If the patient had not applied drops regularly, then what made him not to do it, was also asked. Financial dependency of the patient on others for buying their AGM was evaluated by the questionnaire. Does discount make a difference in patient buying the medicine from the hospital or outside was also evaluated. The responses were elicited primarily from the patient with caregiver's contribution in some. Patient's memory recall time was set at 3 months.

Operational definition of non-compliant and compliance

Based on the patient's reply, a non-compliant patient was defined as one who omitted even a single drop/single dosage in the last 1 month. This percentage was set relatively strict (as opposed to the—albeit arbitrary—frequently used in medicine of 20% noncompliance percentage). This was because the patients have an innate tendency to overestimate their self-reported adherence.^[7]

Another reason for this strict definition of non-compliant was, patient missing a single drop in month, could account for missing 12 drops in a year which can cumulatively cause progressive glaucomatous damage in the longer run despite AGM usage as reported by Robin *et al.*^[1] Also, as all participants in this study were literates from a predominantly urban background, a certain high standard was expected from them.

A compliant patient was defined as one adherent to the regimen and not missing any of the medication dosage/drops for the last 1 month. Compliance made within a month's time was considered in order to reduce recall bias as the average age of patients in the study was high.^[8,9]

Operational definition of relative priority

Relative priority, which is one of the commonest problems in today's fast moving world was defined as relative importance given to AGM application that the patient was taking, to other personal engagements/commitments at that point in time. In other words, the patient mentioned something else was more important to him/her than AGM application at the point of AGM application time.

Statistical analysis

The collected data was entered, and coded in MS-Excel and analyzed using SPSS (Statistical Package for Social Scientist; version 20, IBM, USA). Descriptive statistics in the form of

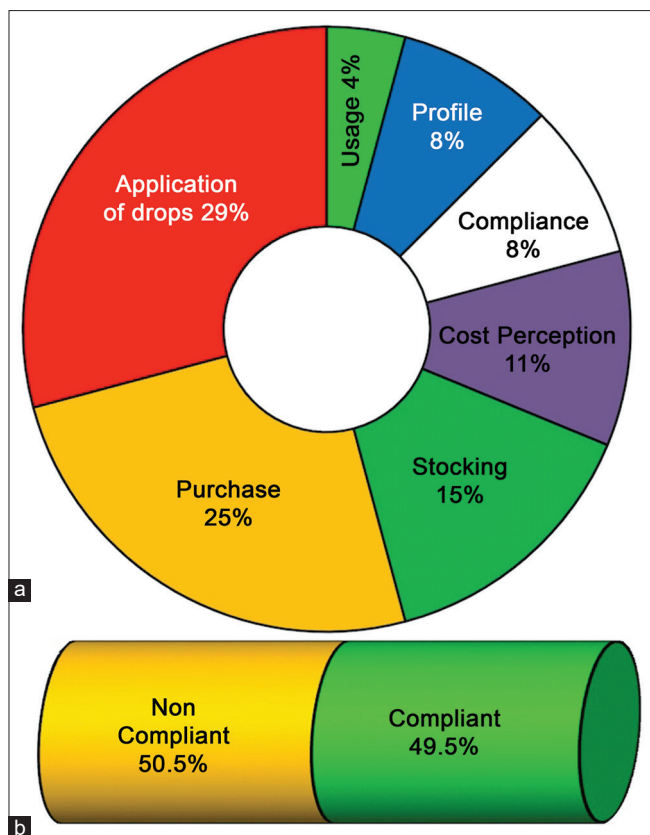


Figure 1: (a) Components of the questionnaire. (b) Self-reported compliance

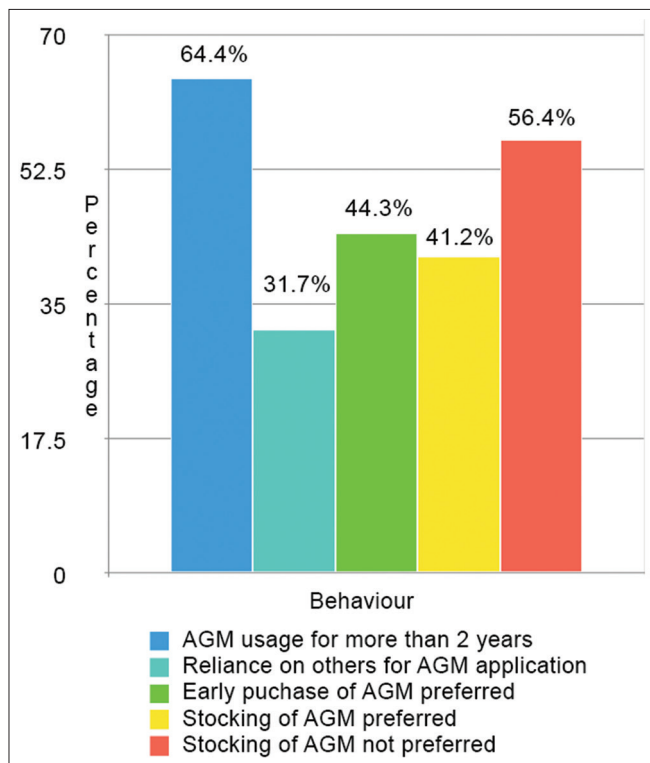


Figure 3: AGM usage, reliability for application, stocking and purchase behaviour

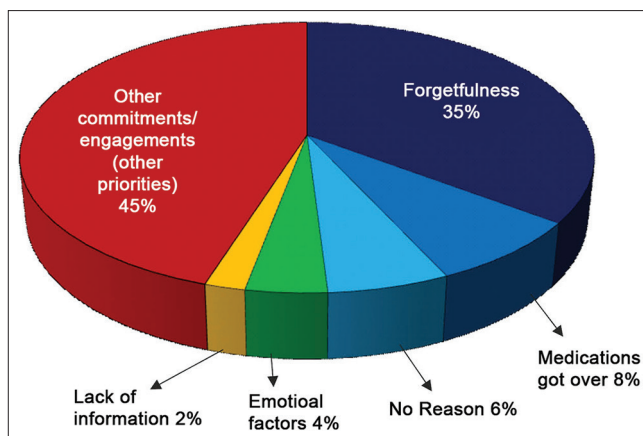


Figure 2: Reasons for AGM non-compliance

frequencies and percentages were then calculated. Questions with considerable variations were associated with the AGM compliance variable using Chi-square test (Fisher’s exact where applicable). Self-reported compliance in medication taking was tested for association with rest of the components such as application of AGM, purchase, stocking, cost perception, compliance, education profile, dependency on other for application, dependency on others for medical expenses and usage of AGM. Statistical significance was considered if the *P* value stood at < 0.05.

Results

Total patients interviewed were 101 (age ranging from 34 to 87 years). They included 61 (60.4%) males and 40 (39.6%) females. 81 (80.2%) patients were from urban and 20 (19.8%) patients were from semi-urban and rural areas. The number of patients found to be non-complaint was 51 (50.5%), whereas 50 patients (49.5%) were found to be compliant to topical AGM [Fig. 1b]. 64.4% were on AGM for more than 2 years. The number of AGMs was 1.3 ± 0.6 (max - 4). Dependence on others for AGM application was reported in 31.7%. Early purchase of AGM before the bottle gets over was reported among 44.3%. Stocking of AGM was reported among 41.2%. Stocking till next review was not preferred by 56.4%. Cost was high for income among 28.7%. Majority of them were not aware of side effects of AGM (91.1%). Reasons for good compliance and adherence were fear and awareness of glaucoma (68.1%). Still, more than half of the patients (50.5%) reported missing taking medication in the past month. Major reason for non-compliant was relative priority (45.1%) and forgetfulness (35.3%) [Fig. 2]. Self-reported compliance was not different by demographic variables or with responses to direct questions regarding duration (*P* = 0.070), application (*P* = 0.825), time of purchase (*P* = 0.272), stocking (*P* = 0.598), and cost perception (*P* = 0.415). Self-reported compliance was also not different with response to direct questions regarding number of AGMs used (*P* = 0.564), awareness on AGM application (*P* = 0.357), awareness of side effects of AGM (*P* = 0.890), number of bottles purchased (*P* = 0.420) and customized purchasing schedules as shown in Table 1. However self-reported compliance was statistically significant with medical expenditure dependency (*P* = 0.007). This was confirmed by discriminant analysis.

Table 1: Association between factors surrounding usage of anti glaucoma medication (AGM) and its compliance

Factor	Noncompliant	Compliant	P
Medical expenditure			
Self-dependent	59.5%	40.5%	0.007
Dependent on other	29.2%	70.8%	
Both	-	100%	
Expenditure strain			
Yes	41.4%	58.6%	0.415
No	55.9%	44.1%	
Duration of Usage			
1-6 months	44.4%	55.6%	0.070
6 – 1 year	87.5%	12.5%	
1 – 2 years	70.0%	30.0%	
>2 years	44.6%	55.4%	
Number of AGMs			
1	51.3%	48.7%	0.564
2	50.0%	50.0%	
3	25.0%	75.0%	
4	100%	-	
Application of AGM			
Self	50.9%	49.1%	0.825
Others	53.1%	46.9%	
Both	43.8%	56.2%	
Given awareness on AGM application			
Yes	48.3%	51.7%	0.357
No	66.7%	33.3%	
Awareness of side effects of AGM			
Yes	40.0%	60.0%	0.890
Partly	50.0%	50.0%	
No	51.1%	48.9%	
Purchase of bottles (no.)			
1	46.8%	53.2%	0.420
2	47.6%	52.4%	
3	60.0%	40.0%	
4	100.0%	-	
Timing of subsequent purchase			
Purchase before bottle gets over	41.9%	58.1%	0.272
Purchase as soon as the bottle gets over	66.7%	33.3%	
Purchase randomly (at convenience)	37.5%	62.5%	
Keep stock (i.e. purchase well ahead)	60.0	40.0	
When using more than one AGM – purchase (n-25)			
Keep stock	44.4%	55.6%	0.408
Purchase just before the bottles are over	36.4%	63.6%	
Purchase after bottles get over	80.0%	20.0%	
If purchased, after bottle gets over. When it is done? (days) (n-12)			
Same day	50.0%	50.0%	0.598
Within a week	66.7%	33.3%	
Randomly (at convenience)	100.0%	-	

Discussion

Glaucoma is the one of the leading cause of irreversible blindness in India. Poor glaucoma awareness, and underutilization of the

ophthalmic services in India, adds to the existing glaucoma burden.^[2,10,11] In such circumstances, the need for increasing compliance of AGM becomes imperative to manage this condition, because non-compliance to AGM therapy has long

been recognized as an important limiting factor in the medical management of glaucoma.^[8] Patients with glaucoma having lower rates of compliance are presumed to be at greater risk of developing visual loss.^[9] This cross-sectional descriptive study was done to evaluate factors affecting compliance to glaucoma medications among a sample of South Indian population. In this study, rather than studying “situational and patient factors alone such as forgetfulness, travel, busy schedule and social responsibilities,” we have also evaluated factors, which may have a possible impact on compliance. Factors that we believed can be corrected or improved to increase adherence to glaucoma medication after a focused group discussion were studied. This study reports using a sample of 101 literate primary glaucoma patients through interviews, to explore such factors associated with compliance to glaucoma medications in an urban tertiary eye care center in South India.

Though India is predominantly rural with a rural percentage of 65.53% in 2019, according to the World Bank collection of development indicators, compiled from officially recognized sources, this study focusses on the literate primary glaucoma patients from predominantly urban background (80.2%). The reason being, there are many studies in India on AGM compliance among illiterate glaucoma patients from rural background but no studies according to our knowledge on AGM compliance among literate glaucoma patients from urban background. Moreover all respondents included in this study were literates and the background (rural, semi-urban or urban) did not really matter. This study will serve more impactful in addressing the missing link of compliance behaviour to AGM among literate primary glaucoma patients; because AGM compliance cannot be taken for granted among literates, as they too can be non-compliant due to various reasons unknown, in spite of the expected knowledge and awareness of glaucoma from them. These grey areas and their compliance behavior’s missing link in literature have been addressed in this study in a detailed manner.

The persistence with glaucoma medications have found to be varying across several studies among different population. In this study, around 50.5% of the interviewed patients reported non-compliance with their glaucoma medications. However, in other developed and developing countries in Asia, the non-compliant rates have found to be varied: Israel (29%), Hong Kong (63.4%), Taiwan (75.8%), Saudi Arabia (19.4%), and Pakistan (65.5%).^[12-16] Though the prevalence noted in this study is in concordance with an earlier study done on glaucoma medication compliance in South India, it is worrying to note that this study, though conducted a decade later with majority of participants from urban population (80.2%), reports similar non-compliance rates, among primary glaucoma patients, which are still high (50.5%).^[17] This points to the fact that the knowledge of the ill-effects of medication non-compliance among glaucoma patients still remains low, even among literates and there is need to ensure that OPD patient education and community awareness on glaucoma needs to be focused in India for both literates and illiterates. Other way to look at this result is, our study had a stricter non-compliance definition than the previous Indian study. So, that could be one of the reasons for higher non-compliance. However all said and done, among literates from a predominantly urban background (80.2%), a lower non-compliance rate was still expected, which was not the case in this study, emphasizing

that lethargy due to relative priority (45.1%) in the fast moving world to be one of the main reasons for non-compliance. Glaucoma counsellors need to re-educate and re-emphasize even for literates visiting glaucoma OPDs against this relative priority, that if once daily medication that lasts only for 24 hours is missed by the patient one dose per week, then 6 weeks of therapy are missed per year.^[1,18] If the patient misses two doses per week, then 12 weeks of therapy per year are missed. Poor medication adherence and non-compliant to medication taking still remains a major medical problem among all specialities let alone ophthalmology, costing around 100 billion to 300 billion dollars per year globally, and is the reason for approximately 33% to 69% of medication-related hospitalizations widely reported.^[19] Despite meaningful improvements in technology, therapeutic tools, and knowledge of the disease, patients can still continue to go blind from glaucoma.^[20]

Review of the studies from Asia shows that difficulty in opening the bottle, presence of a family member with glaucoma, older age, and belonging to a rural area influenced non-compliance rates.^[12,14,17] Being a developing nation with most of the patients without insurance coverage, we expected cost as a major cause of non-compliance. However, we noted relative priority (45.1%) and forgetfulness (35.3%) to be the leading cause. This was similar to previously reported studies.^[21,22] To our surprise only 28.7% felt that the cost of AGM was high. This could be explained by the majority of urban population (80.2%) involved in this study and all were literates.

In this study 64.4% were on AGM for more than 2 years [Fig. 3]. Despite the number of AGMs per patient being minimum (1.3 ± 0.6), the non-compliance rates were high. The number of AGMs however didn’t really have a statistically significant influence on AGM compliance ($P = 0.564$) as shown in Table 1. Another alarming factor was majority of them were not aware of side effects of AGM (91.1%). Hence, proper counselling of patients regarding the side effects of AGM should be emphasized by eye care providers. Though lack of awareness on AGM adverse effects, didn’t influence the patient to be non-compliant over time ($P = 0.890$), 60% of them were compliant when they knew the side effects, which reduced to 50% in the partly aware group, which further reduced to 48.9% in the not aware of the side effects group as shown in the Table 1. Hence glaucoma counselling should be strengthened in this aspect by making the patient more aware of the side effects of AGM, as the results of the study (i.e., reasons for non-compliance) could have been different had they knew about the side effects in the first place.

Dependence on others [Fig. 3] for AGM application was less (31.7%) and didn’t influence the compliance behavior (0.825). However it was observed, AGM compliance was better in the ‘financially depended on others for medical expenditure’ and ‘dependent on both self and others for medical expenditure’ group than the ‘financially self-dependent’ group. This was a striking observation with $P = 0.007$. The possible reason is financial dependency could have made the patients more mentally serious about their medical condition and made them not miss their dosage as somebody/attendant was predominantly shadowing them. Discount on AGM purchase provided by the hospital pharmacy, did not make a difference in patient’s purchase point. Patients preferred purchasing the medication, from where they were comfortable, whether it was hospital pharmacy or outside pharmacy.

Though there are various reasons for good compliance and adherence such as fear and awareness of glaucoma (68.1%), still more than half of the patients (50.5%) reported missing taking medication at least once in the past 1 month. Major reason for it was relative priority (45.1%) and forgetfulness (35.3%). Other reasons were lack of information, emotional factors, no reason, and medication getting over. Compliance rates can be improved by strengthening the reasons inducing good compliance, and preventing reasons causing poor compliance. With awareness of the disease comes fear of losing vision, which in turn increases the compliance rate. So as a follow-up measure in the hospital, we have incorporated glaucoma counsellors to explain about the irreversible damage of glaucoma and the need for compliance to AGM. The importance of the caregiver's role was also emphasized to the patients. We have also recommended patient reminder systems to increase compliance, to the hospital authorities. We developed one such compliance app—Eye Drop Reminder Lite which is an offline reminder app with an overall idea, to know about the compliance of all glaucoma patients to AGM. Individual report of each patient and overall report of all patients will be generated and can be viewed both by the patients in their phones and by the doctor at the hospital server with the Eye Drop Reminder Lite app. Studies have shown that electronic reminders could improve adherence to chronic conditions, such as glaucoma.^[23-25] Thus, some of the measures that could probably improve compliance like disease awareness, development of support system to remind patient about drops, and use of electronic reminders such as short message service (SMS), educational short videos and social media applications should be emphasized.

In this study, self-reported compliance was not different by demographic variables or with responses to all direct questions except one (financial dependence on other for medical expenditure). AGM compliance behavior appears to be multifactorial and not really exhibits a pattern regarding duration of application ($P = 0.070$), application (0.825), purchase (0.272), stocking behavior (0.598), cost perception (0.415), number of AGMs (0.564), awareness on AGM application (0.357) and awareness on the side-effects of AGM (0.890). The possible reason for that is each patient's medication purchase, stocking, application and compliance behavior is unique. Fig. 4 shows the testimony of some primary glaucoma patients with the unique human equation, as to why every individual's behavior is not the same. Hence customized AGM compliance education module regarding what is compliance and what is non-compliance should be developed. Every literate irrespective of rural, semi-urban or urban background, and irrespective of one group/category (application, purchase, stocking, behaviour, etc.) needs to be educated during new and review OPD visits, because they all turned out to be statistically no different for factors influencing compliance.

Limitations

The study has few limitations. Firstly, as mentioned in several studies, with usage of self-reporting method, through use of questionnaires, there is always a chance of overestimation of the results on compliance. Secondly, the study was conducted among literate patients who reported to an urban glaucoma clinic for treatment. Thus the results can only be directly generalized to the 77.7% literates of our population and cannot be generalized to the minority illiterate Indian population. However future studies can be directed at the barriers of

Important observations - The human equation

Patient 2 - 50 percentage of the time I am independent and 50 percentage of the time I am dependent on AGM application. I apply AGM in standing position.

Patient 12 - I was not educated on how to apply AGM by the paramedical staff. Because I am a doctor they didn't feel the need to educate me.

Patient 16 - I stock 4 bottles, only when I travel abroad.

Patient 21 - I come to the hospital well before the review date and feel if Rx is changed, then I have to return the stocked medicines back. The bill has to be kept safe, and that is a headache.

Patient 53 - I am a newly diagnosed glaucoma patient and was told to come after 3 weeks of starting mono - therapy. My AGM got over in the 18th day after purchase (due to improper usage). I thought I can wait for 3 more days (next review date) to buy the drops. Hence I skipped medication due to lack of proper information.

Patient 59 - I am buying 3-4 bottles as my occupation demands me to travel by sea for 3 months. When I don't travel I don't stock.

Patient 62 - I am a newly diagnosed glaucoma patient. If doctor insists stocking is better for compliance, I am ready to stock.

Patient 65 - I buy 3 bottles for 3 months, but use all bottles simultaneously (I place one bottle in work place, one bottle in the car and one bottle in my residence). So I am not aware how many days one bottle lasts.

Figure 4: Important observations: The human equation

AGM compliance among community based illiterate patients. Thirdly, majority (80.2%) of the patients of this study were from urban population. The similar model should be applied to rural population and their compliance behavior must be analyzed. Fourthly, this study was conducted at a single glaucoma clinic in South India; hence the generalizability of the study is limited. Lastly the responses to questions comprising 'cost of AGM' could be biased by the drug used; for example beta blockers are inexpensive, whereas prostaglandins are costly. Controlling for the drug used would give a more relevant interpretation.

Conclusion

Notwithstanding the limitations, our study has several strengths. We have found majority of the patients were not aware of the side effects of AGM. Reasons for good compliance and adherence were fear of losing vision. Reasons for poor compliance were relative priority and forgetfulness. Non-compliance to AGM among primary glaucoma patients was found to be substantially high despite majority of patients being literates from urban background. AGM compliance was better in the 'financially dependant on others for medical expenditure' group and 'both self and others dependent for medical expenditure' group than the 'financially self-dependent' group. AGM compliance is not necessarily reflecting knowledge of the disease, cost perceptions, purchasing power or stocking behavior. This study indicates need for stressing education on AGM compliance by doctors and paramedical staffs to not just one group/category but to all new and old primary glaucoma OPD patients, by paying more attention to their compliance behaviour issues which could benefit indirectly in the preservation of vision from glaucomatous damage. A support system to remind patients about glaucoma medications; with extra effort on awareness by health care providers on the nature of glaucoma, glaucoma susceptibility, importance of treatment, follow-up visits and effect of treatment on prognosis is required and called for.

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Conflicts of interest

There are no conflicts of interest.

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Questionnaire -An Exploratory Study of Compliance in Medication Taking Among Primary Glaucoma Patients

1. Answer is given by

- A. Patient
- B. Attender
- C. Partly attender / partly patient

CAREGIVER'S ROLE

2. Medical expenditure for your Rx are met by

- A. Self
- B. Others
- C. Both self and others

3. Who applies the medications for you?

- A. Self
- B. Others
- C. Sometimes self and sometimes others

EXPOSURE TO AGM/ DURATION OF USAGE

4. Are you using AGM?

- A. Yes
- B. No

5. How long are you using AGM?

- A. 1 month - 6 months
- B. 6 months - 1 year
- C. 1 - 2 years
- D. More than 2 years

NUMBER OF AGMs

6. How many AGMs are you using?

- A. 1
- B. 2
- C. 3
- D. 4

APPLICATION & KNOWLEDGE

7. How do you apply your medication?

- A. Sitting position
- B. Lying down
- C. Variable

8. After applying the medication do you close your eyes or open?

- A. Open
- B. Close
- C. Variable

9.If you close your eyes after applying medications, how long do you think you are closing your eyes?

- A. Less than 1 min
- B. 1-3 min
- C. More than 3 min

10.How do you close your eyes after putting the drops?

- A. Gentle
- B. Tight

11.How many drops at a time you apply in each eye?

- A. 1
- B. 1-2
- C. More than 2

12.Do you place your finger and do nasal (nasolacrimal duct) obstruction after putting the drops?

- A. Yes
- B. No

AWARENESS ON AGM APPLICATION

13.Have you been educated by the hospital (doctor and/or staff) on how to apply the medication?

- A. Yes
- B. No

PURCHASE

14.Where do you buy your medications?

- A. Hospital pharmacy
- B. Outside pharmacy
- C. Hospital and outside pharmacy

15.How many bottles do you buy at a time (for each individual drops)?

- A. 1
- B. 2
- C. 3
- D. 4 and more
- E. Depends on the duration of time between two reviews

16.When do you buy your next bottle / bottles?

- A. Purchase before bottle gets over
- B. Purchase as soon as the bottle gets over
- C. Purchase randomly (at convenience)
- D. Keep stock (i.e purchase well ahead)

17.Does all the bottles get over at the same time?

- A. Yes
- B. No

USAGE - LASTING OF ONE AGM BOTTLE

18.How long do you think one bottle of medication (ENTER NAME OF FIRST MEDICINE) lasts for you?

- A. Less 10 days
- B. 10 -14 days
- C. 15 - 30 days
- D. 31 - 45 days
- E. Don't know

19.How long do you think one bottle of medication (ENTER NAME OF SECOND MEDICINE) lasts for you?

- A. Less 10 days
- B. 10 -14 days
- C. 15 - 30 days
- D. 31 - 45 days
- E. Don't know

20.How long do you think one bottle of medication (ENTER NAME OF THIRD MEDICINE) lasts for you?

- A. Less 10 days
- B. 10 -14 days
- C. 15 - 30 days
- D. 31 - 45 days
- E. Don't know

21.How long do you think one bottle of medication (ENTER NAME OF FOURTH MEDICINE) lasts for you?

- A. Less 10 days
- B. 10 -14 days
- C. 15 - 30 days
- D. 31 - 45 days
- E. Don't know

PURCHASE POINT

22.If you are buying from hospital pharmacy, what is the reason?

- A. Trust
- B. Close by to your place
- C. Buy bulk of meds till next review
- D. Hospital discount/offers
- E. Get medicines only in hospital
- F. Came to hospital so buying from hospital (Convenience)
- G. Billing went to the pharmacy

23.If you are buying from the outside pharmacy, what is the reason?

- A. Buy medications after it gets over
- B. Outside discount/offers
- C. No reason
- D. Hospital very far away from residence
- E. Trust

24. Are you willing to buy medications from the hospital even if you don't have offers, but it can be delivered at your home (with upto 50% of the delivery charges being paid by you)?"
- A. Yes
 - B. No
25. Why did you buy 3-4 bottles from the hospital/ outside at a time for 3 months?
(If patient buys 3-4 bottles at a time as answered in question 15, then only this question will be asked)
- A. Don't get it anywhere, except hospital
 - B. Whenever travel is made to a foreign country or out of station
 - C. Depends
 - D. Maintaining stock till next review is easier
 - E. Coming from far off place
26. Why don't you buy 3-4 bottles from the hospital/ outside at a time for 3 months?
(If patient doesn't buy 3-4 bottles at a time as answered in question 15, then only this question will be asked)
- A. Fear that expiry bottles will be given / Fear that bottles may get expired
 - B. Storing and safe guarding all bottles is a headache
 - C. Cost factor
 - D. It is not needed
 - E. If patient comes to hospital in well before the review date and Rx is changed, then to return the medicines back the bill has to be kept safe
 - F. Patient owns a pharmacy

STOCKING

27. When you are using two or more medications. If one bottle gets over what do you do?
- A. Keep a stock of medications and use from stock
 - B. Just before getting over, go and purchase
 - C. Once the medications gets over, go and purchase
28. If you are given an option to buy a medication till the next review date (eg:- 3 - 4 months later), will you be willing to take the number of bottles required for the period?
- A. Yes
 - B. No
 - C. Sometimes yes / Sometimes no
29. If no. Is cost a factor to buy all the medications
- A. Yes
 - B. No
30. Do you think it is useful to buy all the medications at a time till the next review, so that it may help you in your compliance
- A. Yes
 - B. No
 - C. May be

DELAY IN PURCHASE

31. If you are buying after the medication gets over. How many day/days after the medication getting over are you buying?
- A. Same day

- B. With a week
- C. Random (at convenience)

PROFILE

32. Professional or Non - professional?

- A. Professional (Engaged in a specified activity as one's main paid occupation rather than as pasttime)
- B. Non - professional (Not engaged in any such specific activity as one's main paid occupation)

EXPENDITURE STRAIN

33. Do you feel the medications are expensive over your income?

- A. Yes
- B. No
- C. Reasonable

COST

34. What is the percentage of discount you get from outside?

- A. Less than 5%
- B. 5-10 %
- C. Greater than 10%
- D. No discount

35. What is the percentage of discount you expect from the hospital?

- A. Less than 5%
- B. 5-10 %
- C. Greater than 10%
- D. Discount doesn't matter

COMPLIANCE

36. Do you miss any of your doses?

- A. Yes
- B. No

37. If yes. How many days in a week do you think you miss your dose?

- A. 1
- B. 2
- C. 3
- D. More than 4

38. If yes. How many days in 2 weeks do you think you miss your dose?

- A. 1
- B. 2
- C. 3
- D. More than 4

39. If yes. How many days in a month do you think you miss your dose?

- A. 1
- B. 2

- C. 3
- D. More than 4

COMPLIANCE ATTITUDE

40.If drops application is missed. Why?

- A. Forgetfulness
- B. Medications got over
- C. No reason
- D. Other commitments /engagements (other priorities)
- E. Lack of information
- F. Emotional factors

41.If you are using regularly, what is the reason?

- A. Fear factor
- B. Awareness
- C. Routinely sincere in applying any type of Rx as advised by the treating doctor
- D. All the above
- E. Reminder

AWARENESS OF SIDE EFFECTS OF AGM

42.Are you aware of the side effects of the medications given to you?

- A. Yes
- B. No
- C. Partly yes