

Compliance with topical antiglaucoma medications

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Abstract

Aim: To study the prevalence of non-compliance of patients with glaucoma using long-term topical antiglaucoma medications in a local population in Hong Kong.

Patients and methods: This hospital-based case series of patients with glaucoma was performed at the Glaucoma Clinic at the United Christian Hospital. During their follow-up visit at the outpatient clinic, patients with glaucoma were interviewed by the ophthalmologist-in-charge using a predetermined questionnaire. Open questions on patients' compliance and related factors were asked. None of the patients was informed of the survey prior to recruitment. Non-compliance was defined as any missed dose during the interval between the previous and the present visit.

Results: From September 2001 to December 2002, seventy one patients were recruited into the study. The mean age was 65.3 ± 12.8 years. There were 35 men and 36 women. The non-compliance rate for glaucoma therapy in the studied population was 63.4%. The rate for more than 5 missed doses per week was 12.9%. No associated factors for non-compliance were found in this study.

Conclusions: The non-compliance rate with glaucoma therapy in this local population in Kowloon East was high. The main reasons for non-compliance were side effects and misunderstanding of the administration instructions.

Introduction

Compliance is an important factor influencing the outcome of medical therapy. Whether a medication with high efficacy in large scale clinical trials can successfully exert the same effect when applied clinically depends on patients' compliance. Understanding and improvement of compliance will increase the cost-effectiveness of medical therapy. Non-compliance is deliberate or involuntary failure to comply with a doctor's direction in the administration of medications.

Compliance with oral medications has been extensively reported in many medical and geriatric journals.¹⁻³ Factors reported to have an influence on patients' compliance include polypharmacy, adherence, unpredicted or unwarned adverse effects, personal interpretations and expectations of diseases, and other psychosocial factors.⁴ However, topical eye medications are different from oral medications, as they generally have fewer systemic side effects. Therefore, compliance with topical eye medications may be different from that with oral medications.⁵ An understanding of the scale of non-compliance for patients using topical eye medications can assist with the management of chronic eye diseases.

Glaucoma is a vision-threatening disease. Although there are many different types of glaucoma, most run a chronic course. For most patients, treatment is aimed at lowering the intraocular pressure (IOP). Patients with glaucoma are likely to require life-long treatment with eye medications for control of the disease. They also need to be regularly monitored and their adherence with the antiglaucoma treatment is important. Konstas et al reported that non-compliant patients had higher mean treated IOP and worse visual field loss.⁶

Key words: Glaucoma, Ophthalmic solutions, Patient compliance

Patients with glaucoma are predisposed to non-compliance because the disease is usually insidious and asymptomatic, the treatment is long-term, and there is a lack of subjective improvement following treatment. Furthermore, many patients with glaucoma are elderly. Their eye-drop administration techniques can be highly variable and unpredictable. Administering topical eye medications involves manipulating the small drug bottle and aiming it into the fornices of the eyes after lifting up the head. This requires good hand and eye coordination, which may not be handled well by elderly patients. Thus, glaucoma provides an ideal model for the study of compliance with topical eye medications.

Studies have shown a correlation of non-compliance with age, race, sex, number of medications, agility of patients, and communication between doctors and patients.^{1,7-10} Other studies have proposed that the perception of side effects and negative attitudes to the treatment are major reasons for non-compliance.⁷ Non-compliance with glaucoma therapy has been reported to range from 20% to 58%.^{3,11-13}

Questionnaires have been used in various drug compliance studies.^{14,15} Questionnaires such as the comparison of ophthalmic medications for tolerability¹⁵ have claimed to achieve a high degree of internal consistency, reliability, and reproducibility compared with others. However, most of the questionnaires quoted were designed for European studies. A modified questionnaire for Chinese patients is more appropriate for the population of Hong Kong, as they have different cultural standards and traditional beliefs to Europeans.

Patients and methods

This was a prospective pilot study to evaluate the compliance rate with glaucoma therapy in a local population in the Kowloon East area in Hong Kong. Patients were recruited from the glaucoma out-patient clinic at the United Christian Hospital from September 2001 to December 2002. The hospital provides secondary ophthalmic care for a population of approximately 1 million. Consecutive patients with a diagnosis of glaucoma who required continued topical antiglaucoma medications were recruited into the study. Exclusion criteria included patients with previous ocular operations and patients with communication problems.

The topical antiglaucoma medications prescribed included 0.5% timolol or 0.25% betaxolol twice daily, 1% and 2% pilocarpine 4 times daily, 0.2% dorzolamide twice daily, and 0.005% latanaprost once daily, either as monotherapy or in various combinations.

At the follow-up visit, a thorough ocular examination, including visual acuity, IOP measurement, and slit-lamp and fundal examination, was performed. Individual patient interviews were then conducted using a predesigned questionnaire. The investigating period was from the patients' last appointment to the present appointment, which was

16.0 ± 2.0 weeks. None of the patients was informed of the survey prior to recruitment into the study. The questions included information on patients' demographics, socio-economic and educational level, their awareness of their eye diseases, the frequency of missed doses, the reasons for omitting the dose, adverse effects, and concurrent medical diseases. For awareness of the disease, the answer was regarded as 'correct' if patients were able to name the term 'glaucoma' for their ocular disease.

Results

Seventy one patients were recruited into the study. The mean age of the 36 women and 35 men was 65.3 ± 12.8 years. All patients in the study had a visual acuity of better than 0.05 in both eyes. **Figure 1** shows the educational level of the patients. Only 31% of the patients had achieved an educational level of secondary school or above. **Figure 2** shows the distribution of different types of glaucoma in the study population. Of the 71 patients interviewed, 45 patients reported taking their medication incorrectly, with 44 patients (63.4%) admitting to having missed doses in the period between the last and the present follow-up visit; the rate for more than 5 missed doses was 12.9%. Of the 44 patients, the majority (79.5%) reported missing a dose less than 5 times per week (**Figure 3**). One patient could not recall the frequency of his missed doses and 1 patient reported instillation of the prescribed eye drops more frequently than required. If this patient was included in the sample, the rate of non-compliance would be 77.9% as shown in **Figure 3**.

Figure 4 shows the distribution of patients according to the number of antiglaucoma eye drops prescribed. Forty three patients (60.6%) required a combination of 3 or more eye drops for control of their IOPs. The non-compliance rate was 65.0% for patients using monotherapy and 59.0% for patients using 2 or more eye drops. Antiglaucoma eye drops had been newly prescribed to 17 patients (23.9%). The majority of the patients had already been prescribed antiglaucoma therapy for some time. Of the 17 patients newly prescribed with antiglaucoma eye drops, 59% reported missing a dose since the last follow-up compared with 64.8% for

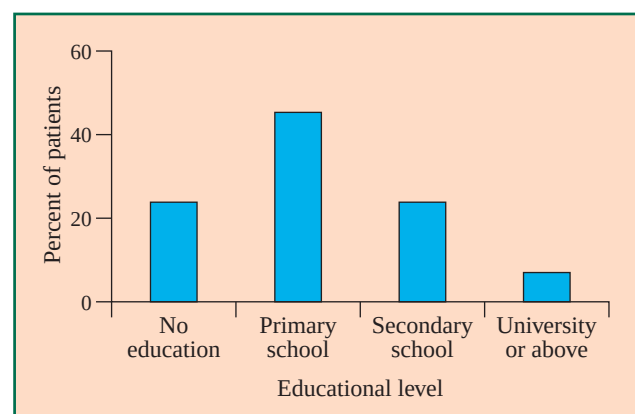


Figure 1. Educational level of patients taking antiglaucoma medications (n = 71).

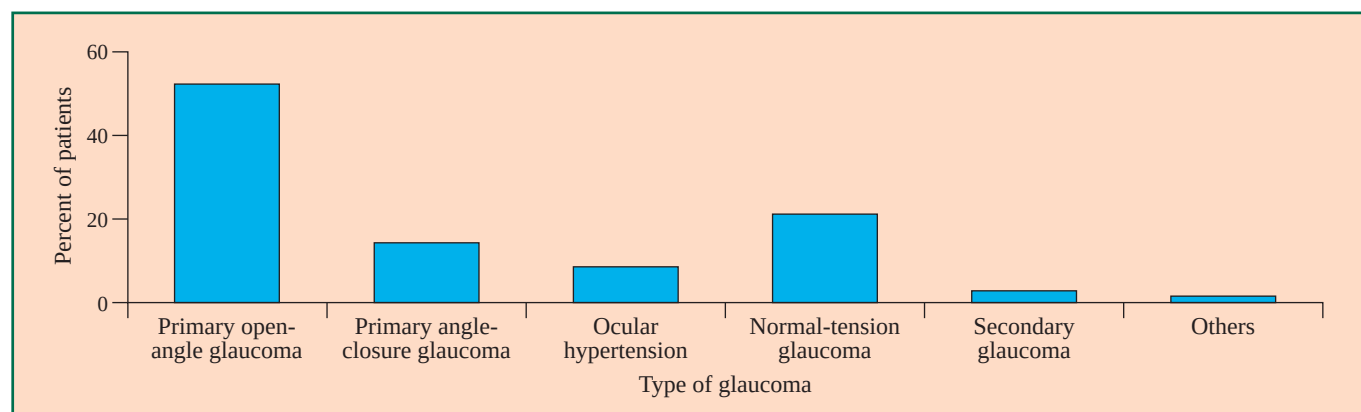


Figure 2. Distribution of different types of glaucoma (n = 71).

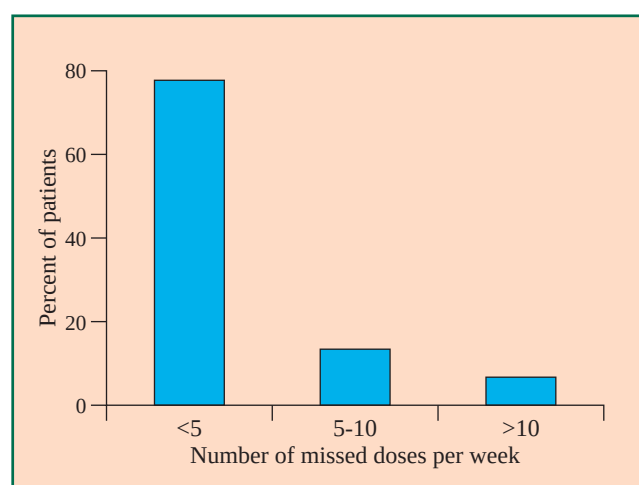


Figure 3. Distribution of missed doses of antiglaucoma medications (n = 45).*

* One patient reported instillation of the prescribed eye drops more frequently than required.

patients already taking antiglaucoma therapy. The majority of patients (67.6%) were not aware of the nature of their eye disorder.

Analysis of the data using the chi-square test showed no correlation between the non-compliance rate and age group, sex, educational level, awareness of the eye disease, first-time use of antiglaucoma medication, number of eye drops prescribed, and type of glaucoma. Furthermore, patients who had already been using glaucoma therapy did not show a significantly higher rate of awareness of the disease.

For patients who had missed more than 5 doses per week, the main reasons given were unexpected side effects and misunderstanding of the instructions. Twenty one patients (29.6%) claimed to suffer from side effects after instillation of the antiglaucoma eye drops and 66.7% of them reported missing doses. However, the occurrence of side effects was not associated with a higher frequency of missed doses in this study population.

No patients in this study had a medical history of rheumatoid arthritis, dementia, or cerebral vascular accident that might have affected their agility for eye drop instillation.

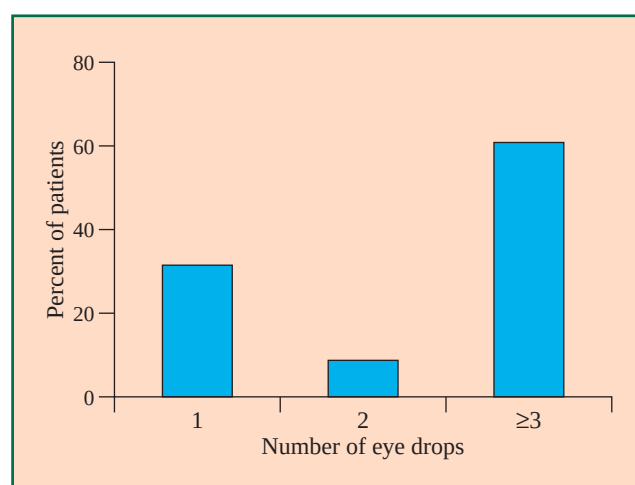


Figure 4. Distribution of patients according to number of antiglaucoma eye drops prescribed (n = 71).

Concomitant medical problems such as diabetes mellitus and hypertension were not associated with a higher non-compliance rate.

Discussion

Topical eye medications play a major role in the treatment of many eye diseases, from non-vision-threatening conditions such as allergic conjunctivitis to vision-threatening conditions such as glaucoma and corneal ulcer. Some topical medications are prescribed on a long-term basis for chronic eye diseases such as glaucoma. In this study, the non-compliance rate was 63.4%, which appears to be higher than that reported in other similar studies.^{8,9} However, direct comparison between studies is difficult because different definitions of non-compliance were used in these studies. If only the rate of frequent missed doses (>5 per week) in this study is considered, the non-compliance rate would be low, at 12.9%. This finding indicates that non-compliance is generally occasional, with fewer than 5 missed doses a week.

Although previous studies have shown that patients' demographics, their awareness of the disease, the number of prescribed medications, and loss of agility are factors associated with non-compliance, this study could not identify a particular type of patient in terms of demographic, social,

or educational characteristics who was non-compliant with medication and could not validate these associated factors for non-compliance. This is not unusual, as people of different races may have different behavioral responses to diseases and medical treatment based on their cultural beliefs. Owing to the small number of patients with rheumatologic or musculoskeletal diseases and because most of the patients had relatively good visual acuity, it was not possible to evaluate the effect of loss of agility on compliance. Educational level and first-time treatment with glaucoma therapy did not correlate with non-compliance.

The main reasons for omitting doses were experience of side effects and misunderstanding of the instructions for the use of the eye drops. Although ignorance of the disease did not correlate with non-compliance, the fact that 67.6% of the patients did not realize they had glaucoma poses a problem that needs to be addressed.

There are limitations to this study. The different types of glaucoma included in this study poses a potential flaw in that some patients with glaucoma, such as those with narrow-angle glaucoma, may have gone through a highly symptomatic stage in the course of the disease. Patients with this type of glaucoma may be expected to have better compliance compared with those with asymptomatic glaucoma, although these results did not confirm this. The focus of this study was on the interval between 2 visits; therefore, whether compliance for individual patients differs in the long term is not known. The information obtained from the study was obtained largely from patients' memory of their performance during the interval between follow-up visits, and this could result in recall bias. Furthermore, patients who defaulted the follow-up visit were not counted and these patients may

represent a more non-compliant group. This study may also have been biased in terms of the study population, which comprised patients with relatively good vision and agility. In future studies, more objective measurements such as IOP control and checking of eye drop bottles for the amount of medication left should be considered to confirm the subjective measurements. Nevertheless, this study has quantified the situation of topical eye medication compliance in a local Chinese population.

Although this study focused on glaucoma therapy, to some extent the results may be applied to other ocular diseases requiring long-term topical eye medications. These include the use of artificial tears for dry eye, topical antibiotics for blepharitis and conjunctivitis, and anti-inflammatory eye drops for allergic eye diseases.

Compliance should not be assumed for patients with a sub-optimal clinical response to treatment. Compliance should be assessed or improved before subjecting patients to an increase in treatment potency. The poor compliance rate in this study has alerted the authors to the importance of doctor-patient communication. The results of this study failed to identify positive correlating factors for non-compliance, but the main reasons given for omitting doses were unexpected side effects and misunderstanding of instructions. To improve compliance for patients for whom topical eye medications are prescribed, the adverse effects should be discussed and explained in detail and clear instructions given as to the correct technique, dose, and time for administration of eye drops. This should be done regardless of the patients' sex, age, educational level, knowledge of their disease, number of prescribed eye drops, and length of use of the medications.

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