

# Decision aids for patients with primary open-angle glaucoma: abridged secondary publication

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## KEY MESSAGES

1. Decision aids can improve disease knowledge, increase patient confidence in medication adherence, and reduce decisional conflict among patients with primary open-angle glaucoma in Hong Kong.
2. Shared decision-making should be emphasised in the management of primary open-angle glaucoma because empowering patients to participate in their care can result in better decision-making outcomes.

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## Introduction

Glaucoma is the leading cause of blindness in Hong Kong, representing 23% of new registrations of permanent blindness in 2001-2002. The prevalence of primary open-angle glaucoma (POAG) in Asia is approximately 5%.<sup>1</sup> POAG is a chronic disease requiring long-term treatments that include eyedrops, laser, and surgery; all of which aim to reduce intraocular pressure.

Management decisions are usually made by clinicians. The choice of treatment primarily depends on clinicians' preferences, which may not be most appropriate for patients' needs. Shared decision-making emphasises patient autonomy, informed consent, and patient empowerment. Patient decision aids (PDAs) are tools designed to promote shared decision-making when multiple treatment options are available, each displaying benefits and harms that patients may value differently.<sup>2</sup> We developed a PDA in accordance with the International Patient Decision Aid Standards. We hypothesised that use of the PDA would be beneficial for patients with POAG.<sup>3</sup>

## Methods

This was a single-centre randomised controlled trial. Consecutive patients were recruited from the outpatient glaucoma clinic at Lo Fong Shiu Po Eye Centre, Grantham Hospital. Eligible patients were randomly assigned to either the PDA group or the control group. Patients in the PDA group received a copy of the Chinese POAG PDA; they were briefly introduced its content and instructed to read the PDA at home.

The primary outcome measures included disease knowledge (measured by a 16-item disease

knowledge questionnaire), patient self-confidence in overcoming barriers to medication adherence (measured by the 10-item Glaucoma Medication Adherence Self-Efficacy Scale [GMAS-10]), and decisional conflict (measured by the 16-item Decisional Conflict Scale [DCS]). Patients were evaluated face-to-face at baseline, 3 months, and 6 months.

Differences in outcome changes between the two groups were analysed using one-way analysis of covariance, with baseline fitted data as a covariate. Estimated mean group differences and corresponding 95% confidence intervals (CIs) were reported. The Holm-Bonferroni method was used to adjust the P values of DCS subscores between the PDA and control groups. A P value of <0.05 was considered statistically significant.

## Results

At baseline, 160 patients aged 25 to 82 (mean, 59.3±9.5) years were recruited. At the end of the study, 156 patients remained: 77 in the control group (60 at 3 months and 73 at 6 months) and 79 in the PDA group (72 at 3 months and 77 at 6 months). The main reason for loss to follow-up was cancellation of clinic appointments during the COVID-19 pandemic. The two groups were comparable in terms of baseline demographic and clinical data (Table 1).

Disease knowledge scores were higher in the PDA group than in the control group at 3 months (12.0±2.3 vs 10.9±2.5) and 6 months (11.9±1.7 vs 11.1±2.6). After adjustment for baseline values, improvements in disease knowledge scores were significantly greater in the PDA group than in the control group at 3 months (1.15, 95% CI=0.5-1.8, F=12.6, P=0.001) and at 6 months (0.9, 95% CI=0.3-

TABLE 1. Baseline demographic and clinical data for all recruited patients

Demographic	Patient decision aid group (n=79)*	Control group (n=77)*	t or $\chi^2$	P value
Age, y	59.5±9.4	59±9.9	-0.4	0.77
No. of women:men	36:43	32:45	0.1	0.71
Duration of glaucoma, y	7.9±7.2	7.2± 6.1	-0.51	0.61
Disease knowledge score	10.2±2.9	10.3±2.6	0.25	0.80
Glaucoma Medication Adherence Self-Efficacy Scale	22.8±6.5	22.3±7.0	-0.37	0.71
Decisional Conflict Scale	45.3±18.4	40.8±17.0	-1.6	0.11
Informed subscore	54.5±22.7	49.4±22.3	-1.7	0.5
Values clarity subscore	48.0±23.3	42.2±25.5	-1.7	0.5
Support subscore	38.3±20.3	33.8±18.2	-1.5	0.42
Uncertainty subscore	47.8±22.0	43.4±22.1	-1.4	0.36
Effective decision subscore	38.2±19.9	36.5±17.7	-0.7	0.54

\* Data are presented as mean± standard deviation unless otherwise indicated

TABLE 2. Changes in scores of the Glaucoma Medication Adherence Self-Efficacy Scale and the Decisional Conflict Scale at 3 and 6 months

Scale	Mean change (95% confidence interval)		Mean group difference (95% confidence interval)	F	P value
	Patient decision aid group	Control group			
Glaucoma Medication Adherence Self-Efficacy Scale					
Change from baseline to 3 months	-1.6 (-2.7 to -0.5)	0.9 (-0.2 to 2.0)	-2.5 (-4.1 to -1.0)	10.1	0.02
Change from baseline to 6 months	-1.7 (-2.9 to -0.5)	0.2 (-1.0 to 1.5)	-1.9 (-3.7 to -0.2)	4.8	0.03
Decisional Conflict Scale					
Change from baseline to 3 months					
Total score	-13.9 (-16.8 to -11.0)	-5.1 (-8.0 to -2.1)	-8.8 (-12.9 to -4.6)	17.4	<0.001
Informed subscore	-20.3 (-24.0 to -16.6)	-8.9 (-12.6 to -5.1)	-11.4 (-16.7 to -6.1)	18.3	<0.001
Values clarity subscore	-18.5 (-22.3 to -14.7)	-9.2 (-13.1 to -5.4)	-9.3 (-14.7 to -3.9)	11.4	0.004
Support subscore	-10.0 (-13.3 to -6.7)	-2.6 (-6.0 to 0.7)	-7.4 (-12.1 to -2.7)	9.6	0.006
Uncertainty subscore	-12.8 (-16.6 to -9.0)	-5.1 (-9.0 to -1.2)	-7.7 (-13.2 to -2.2)	7.7	0.006
Effective decision subscore	-8.6 (-11.6 to -5.5)	-1.7 (-4.7 to 1.4)	-6.9 (-11.3 to -2.6)	9.8	0.004
Change from baseline to 6 months					
Total score	-18.3 (-21.4 to -15.2)	-4.6 (-7.8 to -1.3)	-13.5 (-18.0 to -8.9)	36.0	<0.001
Informed subscore	-26.4 (-30.4 to -22.5)	-8.4 (-12.5 to -4.4)	-18.0 (-23.7 to -12.3)	39.0	<0.001
Values clarity subscore	-23.2 (-27.5 to -18.9)	-5.7 (-10.0 to -1.4)	-17.5 (-23.6 to -11.5)	32.1	<0.001
Support subscore	-11.5 (-15.1 to -7.9)	-2.1 (-5.7 to 1.5)	-9.4 (-14.5 to -4.3)	13.5	<0.001
Uncertainty subscore	-18.9 (-22.6 to -15.2)	-5.8 (-9.5 to -2.0)	-13.1 (-18.4 to -7.8)	23.8	<0.001
Effective decision subscore	-12.5 (-15.9 to -9.2)	-3.4 (-6.8 to -0.01)	-9.1 (-13.9 to -4.4)	14.4	<0.001

1.5, F=9.8, P=0.02).

The GMASS-10 scores for self-confidence in medication adherence were lower in the PDA group than in the control group at 3 months (20.1±6.6 vs 23.3±6.1) and at 6 months (20.9±6.7 vs 22.6±7.0).

After adjustment for baseline values, improvements in GMASS-10 scores were significantly greater in the PDA group than in the control group at 3 and 6 months (Table 2).

Total DCS scores for decisional conflict were

lower in the PDA group than in the control group at 3 months ( $30.2 \pm 13.9$  vs  $37.0 \pm 16.0$ ) and at 6 months ( $25.6 \pm 13.3$  vs  $37.4 \pm 17.5$ ). After adjustment for baseline values, reductions in DCS scores were significantly greater in the PDA group than in the control group at 3 and 6 months (Table 2).

## Discussion

The PDA resulted in significant improvement in disease knowledge, but the small magnitude of this improvement may not be clinically significant. Therefore, we recommend additional patient education, especially regarding glaucoma treatments and outcomes, delivered through multiple formats (eg, lectures or videos) in addition to the PDA.

Improved medication adherence can lead to better disease outcomes and reduce drug wastage.<sup>4,5</sup> We observed significantly greater improvements in self-confidence in medication adherence (measured by the GMASS-10) in the PDA group than in the control group: 2.5 and 1.9 points better at 3 and 6 months, respectively. These results indicated that patients in the PDA group had greater self-confidence in adhering to their daily medication regimen.

The greatest improvement was observed in the DCS score. The PDA effectively helped patients to make confident decisions that best suited their needs. It enabled patients to make informed decisions while considering their own values. It is important for clinicians to empower patients with sufficient knowledge about their diseases and available treatment options to facilitate shared decision-making.

## Conclusions

Our PDA can improve disease knowledge, increase patient confidence in medication adherence, and reduce decisional conflict among patients with POAG in Hong Kong. We recommend distributing

the PDA to patients who may need to decide among different treatment options. The PDA can help patients to make an informed decision while considering their own values, rather than simply following clinicians' suggestions.

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## Disclosure

The results of this research have been previously published in:

1. Zhu MM, Choy BNK, Lam WWT, Shum JWH. Randomized control trial of the impact of patient decision aid developed for Chinese primary open-angle glaucoma patients. *Ophthalmic Res* 2023;66:846-53.

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