

# A Randomized Controlled Trial of an Online Educational Video Intervention to Improve Glaucoma Eye Drop Technique and Adherence

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## INTRODUCTION

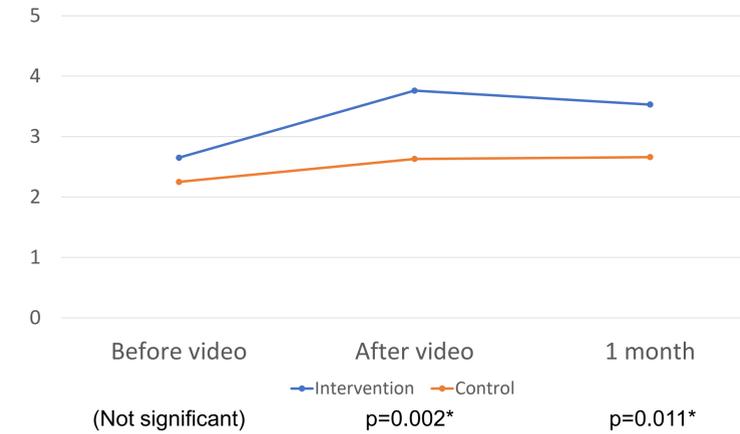
- Glaucoma is one of the leading causes of blindness in the United States, especially in African Americans and Hispanics
- Poor eye drop technique and adherence are major obstacles to successful glaucoma treatment
- Poor technique can include contaminating the bottle tip by touching the eye or face, missing the eye, or squeezing out multiple drops
- Short videos may be able to improve patients' technique and medication adherence

## METHODS

- We enrolled adult patients (N=92) with primary open-angle glaucoma, who instilled their own drops and missed at least one eye drop technique step, at 2 sites
- We assessed five steps: instilling a single drop, getting the drop accurately into the eye, not touching the eye or face with the bottle, holding open the lid with the finger, and closing the eye after instillation
- Patients were randomized to receive the 4-minute Meducation® eye drop technique video in the intervention group, or a 3-minute nutrition video in the control group
- We assessed the primary outcome of eye drop technique by objective video recording before the video, immediately after the video, and at 1 month later. A masked assessor scored the videos
- Secondary outcomes were eye drop technique self-efficacy (measured with a 6-item validated scale; range 6-18) and self-reported medication adherence (measured with a visual analog scale)
- We used multivariable linear regression to predict eye drop technique, self-efficacy, and medication adherence immediately after the video and at 1 month
- All regression models controlled for baseline values of the outcome, and included other relevant covariates (patient and clinical characteristics)
- We asked intervention group patients a list of evaluation and dissemination questions at the final visit to inform a future dissemination and implementation grant

## RESULTS

### Mean Eye Drop Technique Scores



\*P-values are adjusted for baseline technique, baseline self-efficacy, and other covariates that qualified for the multivariable models

Linear regression model predicting eye drop technique immediately after watching the video (N=81).

\*p<0.05; \*\*p<0.01, \*\*\*p<0.001

Independent variables	Beta (95% CI)
Intervention	0.75 (0.27, 1.22)**
<b>Covariates</b>	
Baseline technique	0.42 (0.25, 0.60)***
Baseline self-efficacy	0.13 (0.01, 0.24)*
Outcome expectations	0.04 (-0.02, 0.09)
Race, African American	-0.36 (-0.83, 0.12)

Linear regression model predicting eye drop technique at 1 month (N=77).

\*p<0.05; \*\*p<0.01, \*\*\*p<0.001

Independent variables	Beta (95% CI)
Intervention	0.63 (0.15, 1.10)*
<b>Covariates</b>	
Baseline technique	0.44 (0.26, 0.61)***
Baseline self-efficacy	0.00 (-0.11, 0.12)
Outcome expectations	0.09 (0.04, 0.15)**
Previously educated about technique	-0.50 (-0.96, -0.03)*

## PARTICIPANTS

- Mean age: 69.2 (standard deviation: 10.7)
- 51% male
- 59% White, 36% Black/African American, 3% Asian, 1% Hispanic
- Mean years of schooling: 15.8 (standard deviation 3.3)
- 59% had moderate to severe glaucoma, and patients used a mean of 1.95 glaucoma medications and 3.15 doses/day

## MAIN RESULTS

- The intervention significantly improved eye drop technique immediately after the video and at 1 month
- After adjusting for baseline technique and other covariates, the intervention group performed 0.75 steps better than the control group immediately after the video (p=0.002) and 0.63 steps better than the control group at 1 month (p=0.011)
- After adjusting for baseline self-efficacy, the intervention group had 0.62 points better self-efficacy than the control group immediately after the video (p=0.024) and 0.82 points better self-efficacy at 1 month (p=0.015)
- After adjusting for baseline adherence, medication adherence was not significantly better in the intervention group than the control group at 1 month (beta=2.8 percentage points; 95% CI: -3.8, 9.5; p=0.40)
- Patients endorsed disseminating the video on the doctor's office website (79%), in the exam room (77%), in the waiting room (77%), or on social media (74%)

## CONCLUSIONS

- A short educational video on eye drop technique can significantly improve eye drop technique and self-efficacy
- The video did not significantly improve self-reported adherence, possibly because the video did not directly address adherence, the 1-month time frame was too short, or a more effective adherence measure (electronic monitoring or pharmacy refills) was needed
- Further studies are needed to validate the results and see the longer-term effects of the intervention
- The effect of the intervention persisted for at least 1 month
- The intervention is inexpensive and can easily be done in any eye care provider's office

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