



ATLAS LITERATURE REVIEW

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Welcome to the third issue of Centre for Eye Health's **ATLAS Literature Review**. Each quarter we'll be bringing you reviews from our pick of the latest literature as part of your ATLAS subscription.

Meditate to reduce IOP in ocular hypertension

Prepared by Sharon Ho and Elisa Wang

Clinical applications: Mindfulness-based stress reduction (MBSR) was associated with a significant decrease in intraocular pressure (IOP) and serum cortisol, improvements in optic nerve head perfusion along with benefits for mental health. Clinicians may consider MBSR in the form of meditation as a potential treatment option in the management of ocular hypertension.

Summary: This study evaluated the effect of MBSR on IOP in patients with ocular hypertension. Patients with IOP between 21-30mmHg and no optic nerve or visual field damage were randomised to group 1 (one hour daily MBSR) or group 2 (observation). Change in IOP as the primary outcome was measured after 6 weeks.

Key findings: A significantly greater decrease in IOP was noted in group 1 ($3.93 \pm 1.47\text{mmHg}$) compared to group 2 ($0.17 \pm 0.58\text{mmHg}$). Greater improvements in diurnal IOP fluctuation, vessel perfusion and vessel density were also noted in group 1 as compared to group 2. Group 1 showed a decrease in serum cortisol levels and improved quality of life, these findings not seen in group 2.

Reference: Dada T, Mondal S, Midha N, et al. Effect of Mindfulness-Based Stress Reduction on Intraocular Pressure in Patients With Ocular Hypertension: A Randomized Control Trial. American Journal of Ophthalmology. 2022 Feb 2;239:66-73.

[Click here for abstract](#)

In this issue:

Prepared by Sharon Ho and Elisa Wang

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A novel therapy for myopia control in children

Prepared by Sharon Ho and Elisa Wang

Clinical applications: Repeated low-level red-light (RLRL) therapy is a promising treatment for myopia control in children, being competitive with orthokeratology and atropine eyedrops in terms of efficacy and having good user acceptability and minimal side effects. Nevertheless, its long-term performance, rebound effects, optimal treatment strategies and potential underlying mechanisms are to be determined.

Summary: This study assessed the efficacy and safety of RLRL therapy for myopia control in children. The rationale was for RLRL therapy to offer an alternative to increasing bright light exposure simulating time spent outdoors which is known to be protective for myopia development. Children aged 8 to 13 years were randomly assigned to one of two interventions: RLRL plus single vision spectacles (SVS) or SVS only. RLRL therapy involved repeated treatment twice a day, 3 minutes per session, 5 days per week, and was administered at home under parent supervision.

Key findings: After 12 months, children in the RLRL group demonstrated slower axial elongation by 0.26mm and slower spherical equivalent refraction progression by -0.59D compared to children in the SVS only group. This represented a 69.4% slowing of axial elongation and 76.6% slowing of myopic refraction progression. No severe adverse events (sudden vision loss or scotoma), functional visual loss or structural damage were observed. RLRL efficacy significantly increased with improved treatment compliance.

Reference: Jiang Y, Zhu Z, Tan X, et al. Effect of Repeated Low-Level Red-Light Therapy in Myopia Control in Children: A Multicenter Randomized Controlled Trial, *Ophthalmology* 2021:S0161-6420(21)00916-7.

[Click here for full paper](#)

Predicting the quality of life of patients with macula oedema

Prepared by Elisa Wang and Sharon Ho

Clinical applications: There are many factors to consider when predicting the quality of life (QoL) of a patient with macular oedema who need intravitreal injections. Visual acuity is an important predictor of a patient's vision-related QoL (VrQoL). Clinicians should also consider other demographic (e.g., sex, age, single/non-single civil status, employment status) and clinical factors (e.g., other ocular comorbidities) in the risk assessment of a patient's QoL.

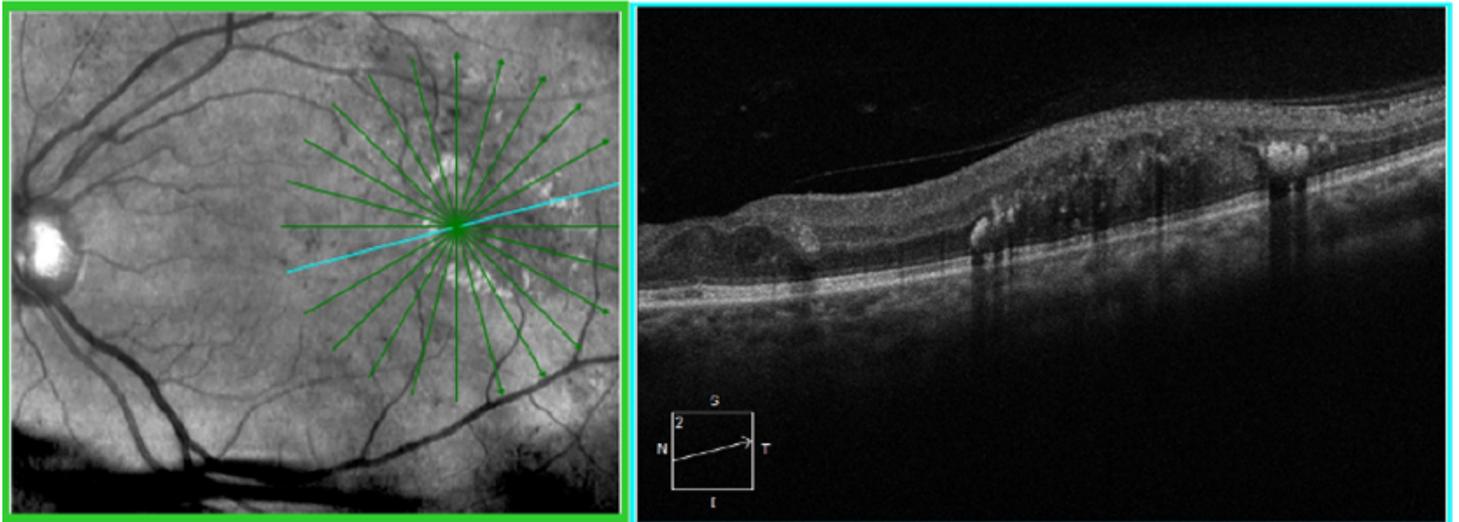
Summary: This study assessed which demographic and clinical characteristics can help predict the QoL and VrQoL in patients receiving intravitreal injections for macula oedema. Patients completed the surveys three times: 1) at baseline, 2) after 6 months and 3) after 12 months, and visual acuity was measured on the same day.

Key findings: Predictors of a lower VrQoL and QoL include: female sex, older age, single civil status and presence of non-ocular comorbidities. In addition, ocular comorbidities and longer intravitreal injections treatment predicted a lower VrQoL, and educational background predicted a lower QoL.

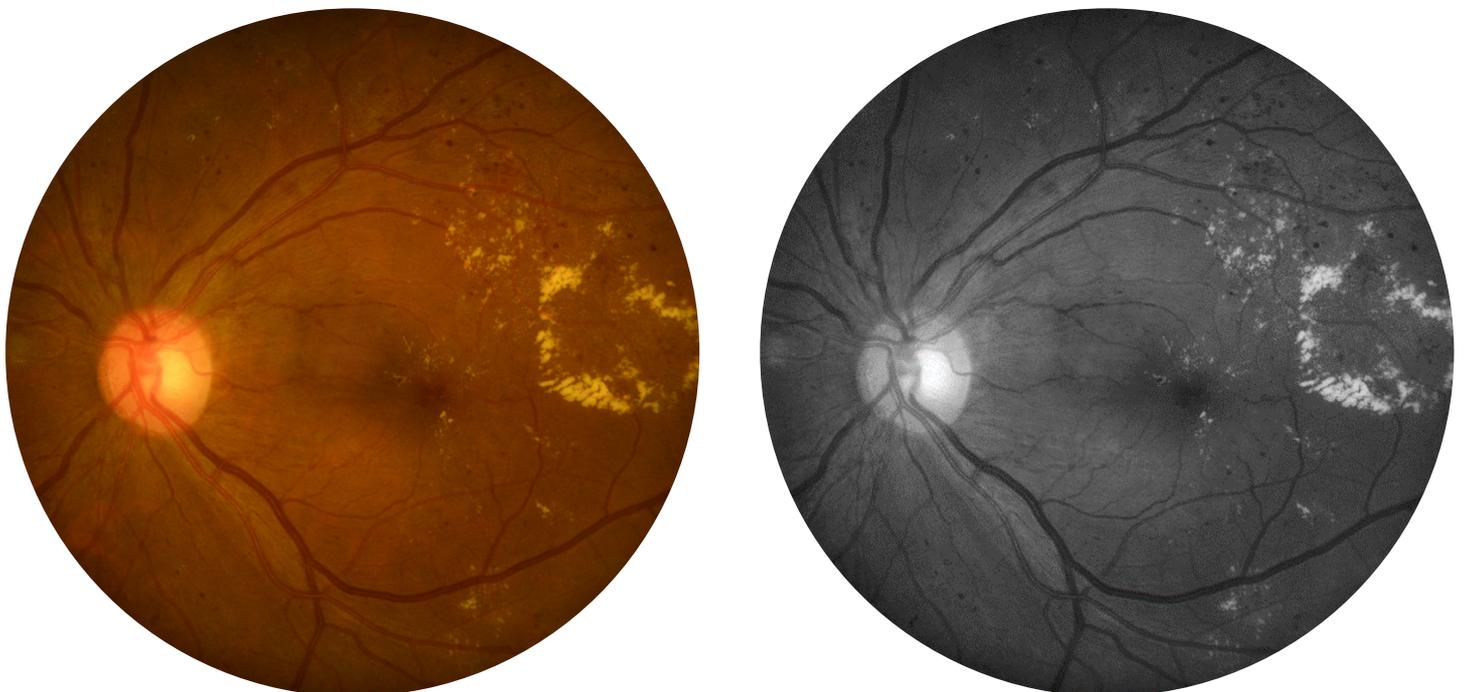
Reference: Rausch-Koster PT, Rennert KN, Heymans MW et al. Predictors of vision-related quality of life in patients with macular oedema receiving intravitreal anti-VEGF treatment. *Ophthalmic & Physiological Optics*. 2022; doi: 10.1111/opo.12984. Epub ahead of print.

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Centre for Eye Health case study: A 46 year old Asian female with type 2 diabetes, diagnosed 15 years ago who reports a history of poor glycaemic control.



Cirrus OCT: A radial macular scan shows macular oedema, indicated by hypo-reflective intraretinal cystic spaces, retinal thickening and the presence of hard exudates



Fundus photography shows a circinate area of hard exudates temporal to the macula, hard exudates around the macula in an early macular star formation, and further exudates scattered throughout the posterior pole. These findings indicate widespread macular oedema. Pinhole visual acuity was measured at 6/30.

Certain types of face masks can increase eye pressure during exercise

Prepared by Elisa Wang and Sharon Ho

Clinical applications: Face masks are effective against COVID-19 transmission, particularly during indoor exercise. However, strength training – a common type of indoor exercise – leads to a sudden increase in intraocular pressure (IOP). Therefore, to limit sudden fluctuations in IOP, clinicians may consider advising glaucoma patients to wear a surgical mask, instead of a filtering face piece 2 (FFP2) mask; and to exercise under dynamic conditions instead of isometric conditions.

Summary: This study assessed how IOP would change during exercise while wearing different types of face masks. Twenty-two physically active young participants performed dynamic (10 repetitions) and isometric (holding load for one minute) biceps-curl exercises while wearing a surgical mask, a FFP2 mask and no face mask.

Key findings: Wearing a FFP2 mask during dynamic exercise showed a significant increase in IOP compared to exercising without a mask. The IOP response to isometric exercise was greater than during dynamic exercise, regardless of the face mask used.

Reference: Vera J, Redondo B, Ortega-Sanchez A, et al. Effect of wearing different types of face masks during dynamic and isometric resistance training on intraocular pressure. *Clinical and Experimental Optometry*. 2022; doi: 10.1080/08164622.2022.2054315. Epub ahead of print.

[Click here for abstract](#)

Are online materials any good for educating AMD patients?

Prepared by Sharon Ho and Elisa Wang

Clinical applications: Online education materials are popular, easily accessible sources of information. Most online education materials about age-related macular degeneration (AMD) are easy to understand but difficult to act on. Clinicians may draw on online materials to support their patient consultations and management but must be aware of their shortcomings and be selective in which resources to recommend to AMD patients. In particular, actionable instructions (e.g. how to use the Amsler grid) are often insufficiently portrayed in online materials and may need to be relayed via some other means with step-by-step guidance.

Summary: This study assessed the quality of online materials about AMD based on whether they are easy to understand ('understandability') and whether they can instruct the patient on what to do ('actionability'). Online education materials were sourced from six English-speaking nations including Australia, and evaluated by three optometrists using validated criteria.

Key findings: Across 75 online materials, the mean 'understandability' score was 74% (range 38% to 94%) and the mean 'actionability' score was 49% (range 0% to 83%). The online materials scored most poorly for the criteria of including a summary of key points and providing visual aids (e.g. pictures or diagrams) to make instructions easier to act on.

Reference: Wang E, Kalloniatis M, Ly A. Assessment of patient education materials for age-related macular degeneration. *Ophthalmic Physiol Opt*. 2022 May 6. Epub ahead of print.

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Ocular lubricants may effectively relieve dry eyes when using digital displays

Prepared by Elisa Wang and Sharon Ho

Clinical applications: Use of digital displays (e.g., computers and phones) and contact lens wear are key risk factors for dry eye disease. Clinicians should consider recommending ocular lubricants to contact lens wearers to help alleviate symptoms of dry eyes, such as burning or itching eyes, that are brought on by digital display use. Holding devices closer and at lower angles may also help with dry eye symptoms and reduce disruptions to the tear film.

Summary: This study compared the effects of using ocular lubricants and wearing contact lenses when viewing digital displays. Young and healthy contact lens wearers without any dry eye disease were recruited. Participants performed a 20-minute reading task on a computer and a smartphone under three different viewing conditions: 1) no contact lens wear, 2) with daily disposable contact lenses, and 3) with daily disposable contact lenses and lubricant eye drops. Dry eye signs and symptoms were assessed before and after executing the reading task.

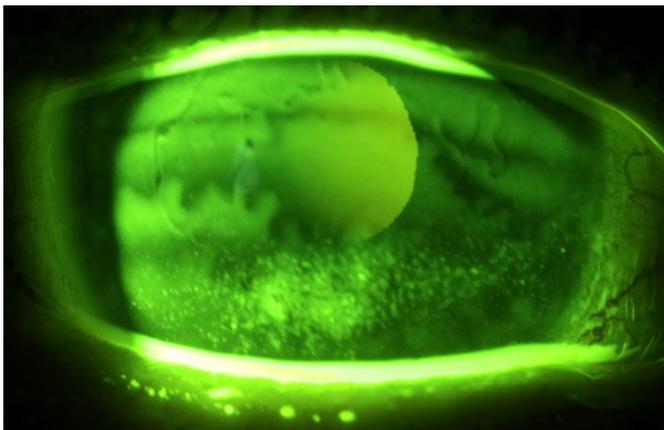
Key findings: Increased dry eye symptoms after short periods of reading on digital displays were reported for both with and without contact lens wear. Lubricant eye drops for both contact lens wearer and non-wearers are effective in reducing the signs and symptoms of dry eyes experienced when using digital displays.

Reference: Talens-Estarellles C, Garcia-Marques JV, Cervino A, et al. Digital display use and contact lens wear: Effects on dry eye signs and symptoms. *Ophthalmic & Physiological Optics*. 2022; doi: 10.1111/opo.12987. Epub ahead of print.

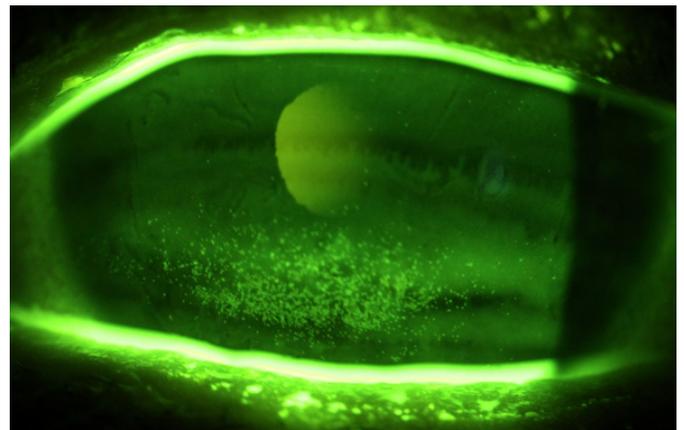
[Click here for abstract](#)

Centre for Eye Health case study: A 64 year old female with severe exposure keratitis and meibomian gland dysfunction. Symptoms include sensitivity to glare and sore gritty eyes.

Positive/negative staining and corneal valance OD



Positive/negative staining and corneal valance OS



Images show inferior anterior stromal scarring and extensive superficial epithelial keratitis with positive staining for fluorescein.