

## **Chronic headache amelioration with prismatic lens treatment of vertical heterophoria**

**Objective:** The objective of this study was to quantify the reduction of headache symptoms with the use of prismatic lenses when treating chronic headache patients concomitantly diagnosed with Vertical Heterophoria (VH).

**Background:** VH is a binocular vision disorder characterized by symptoms of headache, dizziness, anxiety, neck pain and difficulty with reading which can be corrected by use of prismatic lenses. Utilizing new techniques to diagnose VH, our prior work (*PM R 2010;2:244-253*) revealed that VH may be a common (though currently under-recognized) etiology for headache. We previously demonstrated a 71.8% subjective reduction of overall VH symptom burden with prismatic lens treatment, which correlated with a 48.1% reduction of the Vertical Heterophoria Symptom Questionnaire (VHSQ) (a self-administered VH symptom assessment instrument developed by the authors).

**Methods:** This retrospective analysis included 41 patients presenting to an optometric binocular vision subspecialist with a primary complaint of chronic headache who were subsequently diagnosed with VH. Data was collected before and after VH intervention from a validated survey instrument (Headache Disability Inventory [HDI]); subjective 0-10 rating scale of headache (0-10 headache scale); self-administered vertical heterophoria symptom burden instrument (VHS-Q). A sub-analysis of VHSQ questions that pertained specifically to headache was also performed. Subjective assessment of overall VH symptom improvement after treatment was obtained utilizing a 10 cm visual analog scale (VAS). Treatment effects were analyzed using paired t-tests.

**Results:** There was a 41.0 % decrease in the HDI score with realigning prismatic lens intervention ( $p < 0.0001$ ), as well as a 59.3% reduction of the 0-10 subjective pain scale for headache ( $p < 0.0001$ ). The score for the subset of headache questions in the VHSQ reduced by 52.8% ( $p < 0.0001$ ). This correlated with an overall reduction of VH symptoms as noted by a reduction of the total VHSQ score by 53.4% ( $p < 0.0001$ ), as well as by a subjective decrease in VH symptom burden as noted by a reduction in the VAS by 81.0% ( $p < 0.0001$ ).

**Conclusion:** In patients with chronic headache and VH, treatment with prismatic lenses resulted in marked reduction of all metrics for headache, which was positively correlated with their perception of overall VH symptom reduction. Treatment of VH concomitantly resulted in marked reduction of all metrics for dizziness and anxiety. Identification of VH in patients with chronic headache is therefore very desirable given the effective treatment available. While VH appears common in our population of headache patients, further studies will be required to determine prevalence of VH in the general headache population.

## Percent Reduction of Various Metrics in Patients with Headache Treated for VH

