

Long-term anti-VEGF therapy outcomes among a South Asian population with diabetic macular oedema, in a real-world clinical setting



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Background

For over a decade anti-VEGF intravitreal injections have been a first-line treatment for patients with diabetic macular oedema (DMO), improving both structure and function (1).

The prevalence of diabetes amongst patients of South Asian heritage is estimated to be around 22% (2) and yet South Asian patients are under-represented in most clinical trials for DMO (3.1% and 5.2% in the RISE and RIDE trials respectively) – with the majority of participants being Caucasian (3).

Whilst there is evidence that South Asian patients with DMO respond well to anti-VEGF treatment in the first 12 months (4), little is known about their longer-term outcomes. Here we present 5-year data looking at the baseline characteristics and structural and functional outcomes of South Asian patients with DMO, in comparison to a Caucasian cohort.

Methodology

All patients attending the Bradford Macular Centre and receiving anti-VEGF treatment for diabetic macular oedema were retrospectively identified from an electronic patient database. Patients were then excluded if they did not have ≥5 years of follow up data, had other ocular co-morbidities, had been treated with intravitreal steroid or were not of Caucasian or South Asian ethnic background (self reported).

Data was then retrieved from their electronic patient record on baseline best corrected visual acuity (BCVA), baseline central macular thickness (CMT), age, gender, duration of diabetes, ethnicity, diabetes type (I or II), baseline retinopathy grading and postcode. From the postcode data an index of multiple deprivation (IMD) score was determined from the national 2025 database (<https://deprivation.communities.gov.uk/orer2025>). The lower the number the more deprived the neighbourhood.

Additional data was collected for BCVA and CMT at year 1, year 2, year 3, year 4 and year 5, as well as the total number of injections over 5 years and the type of anti-VEGF used. To reduce bias only one eye was selected for analysis from each bilateral patient. This was the first eye to be treated, or the right eye if both eyes were treated on the same day (unless this eye was amblyopic). All eyes were treated according to a treat and extend protocol following 3 loading doses.

Results

34 Caucasian eyes and 33 South Asian eyes met the inclusion criteria for the study. The Caucasian group were 91% White British and 9% Other White Background, and the South Asian group were 76% Pakistani, 12% Bangladeshi, 9% Indian and 3% Other South Asian heritage. A comparison between the characteristics of both groups is shown in Table 1.

Variable	Caucasian	South Asian	p-value
Baseline age	62.9 years	60.0 years	p=0.330
Female gender	26.5%	48.5%	p=0.063
Baseline BCVA	66.7 letters	65.5 letters	p=0.646
Baseline CMT	464.6µm	469.8µm	p=0.816
Baseline retinopathy grade	Grade 1 = 35.3% Grade 2 = 44.1% Grade 3 = 20.6%	Grade 1 = 21.9% Grade 2 = 40.6% Grade 3 = 37.5%	p=0.257
Duration of diabetes	12.3 years	21.5 years	p<0.001
IMD Score	12809.4	2607.4	p<0.001
Number of injections	19.5	18.2	p=0.543

Table 1: Patient and eye demographics for the Caucasian and South Asian groups

The mean change in BCVA over 5 years was +3.2 letters for the South Asian group and +4.7 letters for the Caucasian group which was only significantly improved from baseline in the Caucasian group (p<0.05). After adjusting for duration of diabetes an ANCOVA showed no difference in change in BCVA over 5 years between the Caucasian and South Asian groups ($F(1,43) = 0.169$, $p=0.683$) (see Figure 1).

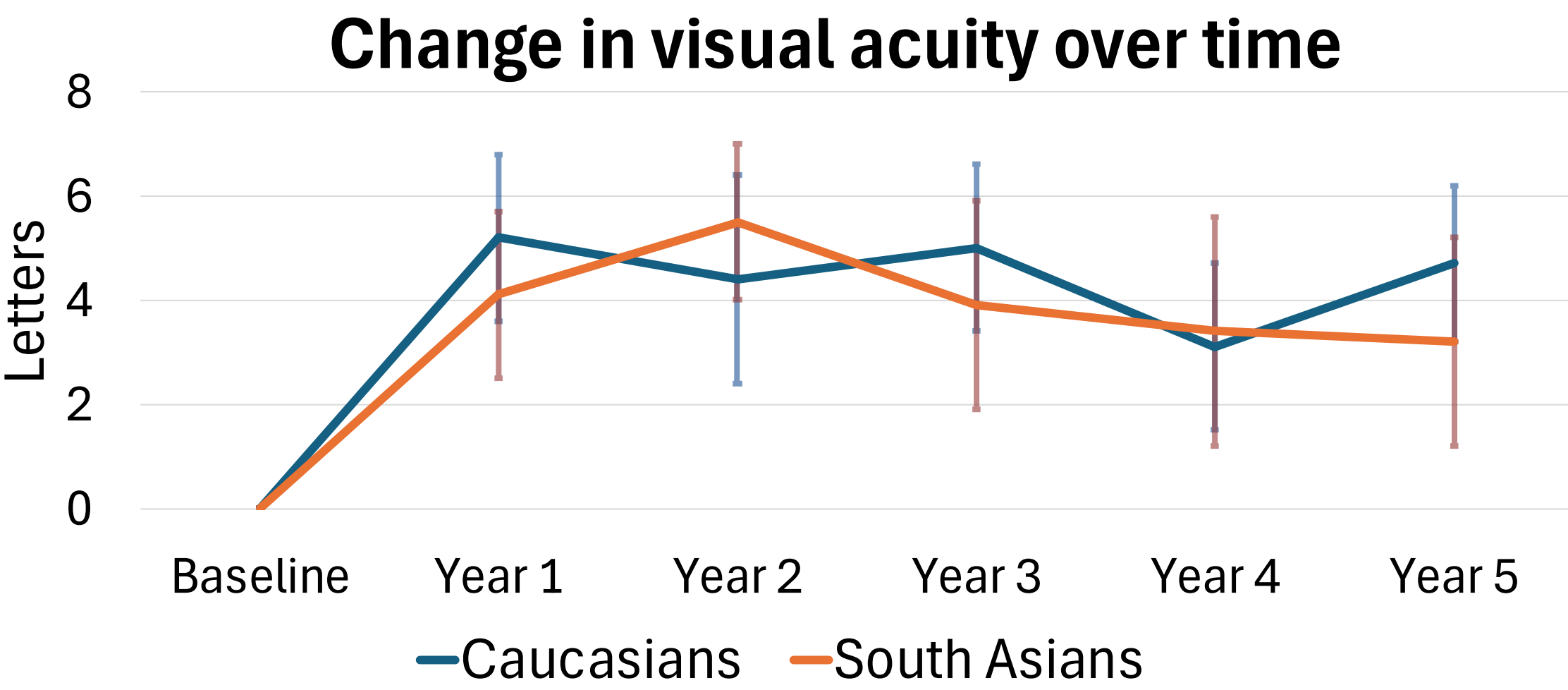


Figure 1: Showing change in BCVA over 5 years for both ethnic groups. Error bars show SEM.

Both groups showed a significant reduction in CMT from baseline (South Asian = -139.3µm, $p<0.001$ and Caucasian = -150.5µm, $p<0.001$). After adjusting for baseline CMT there was no difference in the change in CMT over 5 years when comparing between the two ethnic groups ($F(1,63) = 0.075$, $p=0.784$).

Conclusion

Despite living in more deprived neighbourhoods and having a longer duration of diabetes than an age-matched and retinopathy-matched Caucasian group, patients of South Asian ethnicity treated for DMO showed no difference in structural or functional outcomes over 5 years. Both ethnic groups showed a small improvement in vision and reduction in CMT.

Limitations

A limitation of the study is that patients who had previously received macular laser treatment were not excluded from analysis, as this was not always well documented if pre-dating the electronic records system. Additionally, some patients had disrupted treatment during the pandemic which could have affected their outcomes. The study is also limited to a single geographical location and therefore the population demographics may not represent ethnic groups in other parts of the UK.

References

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