

AGE-RELATED RETENTION AND NON-ATTENDANCE IN A TWO-YEAR DIABETIC RETINOPATHY SCREENING PATHWAY: FIVE-YEAR COHORT RESULTS

AUTHORS

Ruth McCarthy, Shane McMahon, Joanne Harmon,Caoife Shine – NEC Care, Cork Ireland
Prof. David Keegan – Diabetic RetinaScreen, Dublin, Ireland

INTRODUCTION

Diabetes Mellitus affects approximately 5.2% of the population of Ireland¹. The Irish National Diabetic Retinopathy Screening Programme, RetinaScreen, was launched in 2013 as a free service to all diabetic patients over the age of 12 years². All patients with no retinopathy and background retinopathy were originally put in a yearly interval pathway for screening. In July 2020, a two-year interval screening (2YIS) pathway was added to the programme for patients who were deemed safe to be moved. Patients with a worst final grade of ROM0 and no Non-diabetic Eye Disease (NDED) for two consecutive years within the Routine Digital Screening (RDS) programme were deemed suitable for the 2YIS pathway.

This study investigates the proportion of patients still within the 2YIS pathway after 5 years and the age category which is at the most risk of being referred out of the 2YIS pathway.

METHODS

Patients who were first flagged into the 2YIS pathway were investigated five years after its initiation. Data on these patients was extracted from the OptoMize programme that is used when processing patients.

Factors looked at included gender, diabetes type, age and last grading outcomes. These outcomes were then investigated by age group within the age cohort and compared to similar cohorts within extended screening intervals for “Did Not Attend” (DNA) rates per age group.

The following patients were excluded from this study; patients who are not off the register due to being deceased or medically unfit, de-consented, moved out of area, and those who are now in the pregnancy pathway.

RESULTS

Cohort

A total of 15,369 patients were tagged as 2YIS pathway on OptoMize. In accordance with the eligibility criteria, 13,720 patients were included within the study cohort. The average age of this group was 68 years, 58.7% were male and over 93% of patients had Type 2 Diabetes Mellitus. This information can be seen in Figure 1.

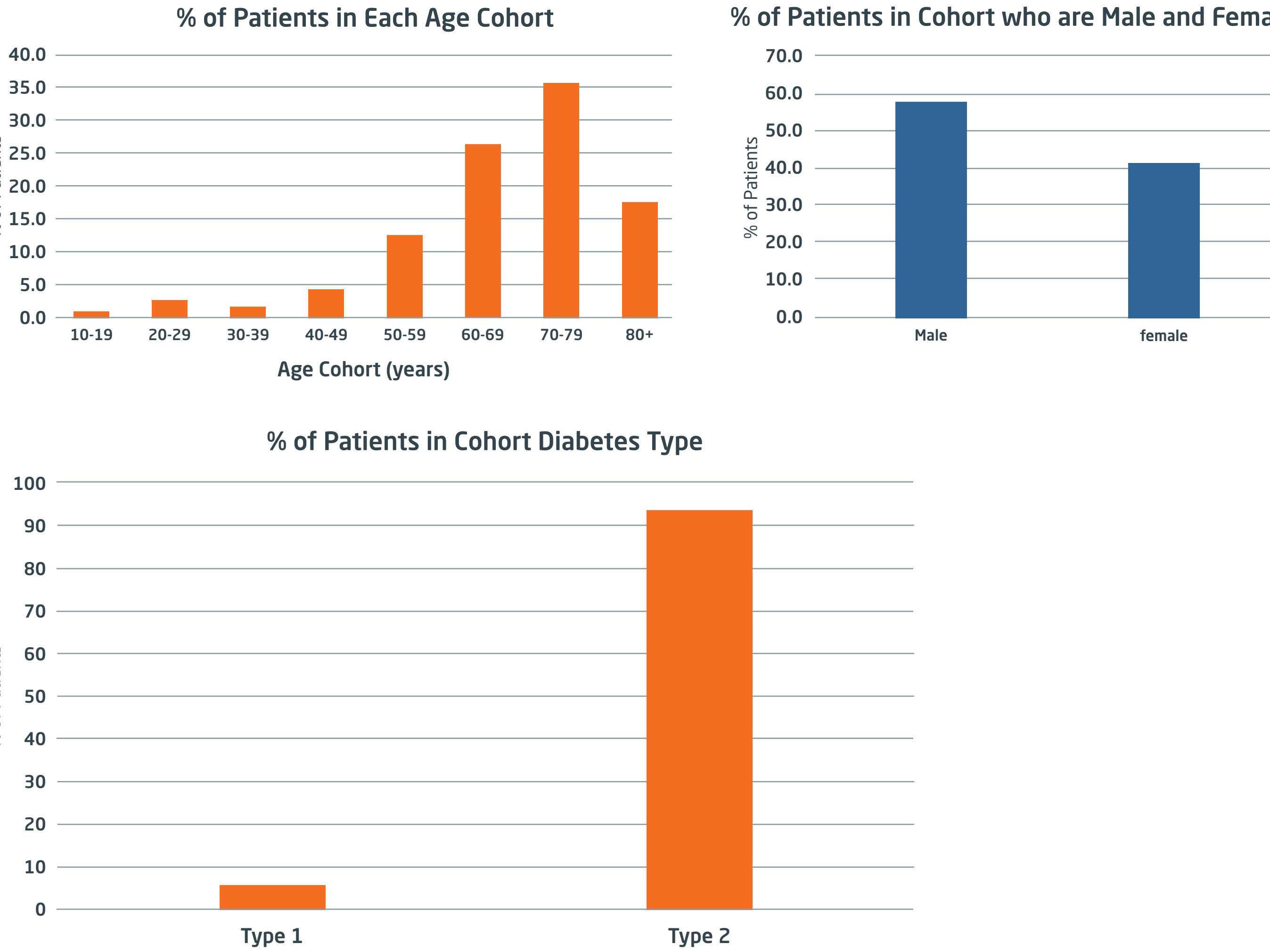


Figure 1: Cohort details of patients within 2YIS study cohort.

Outcomes

As seen in Figure 2, this study identified that over 61% of patients remained in the 2YIS pathway after five years. Positively, it was found that only 0.044% of patients were referred out of the 2YIS pathway due to proliferative retinopathy (0.015% for urgent diabetic retinopathy (DR) and 0.029% for urgent non-DR).

% of Patients Last Grading Outcome in 2YIS pathway after 5 years

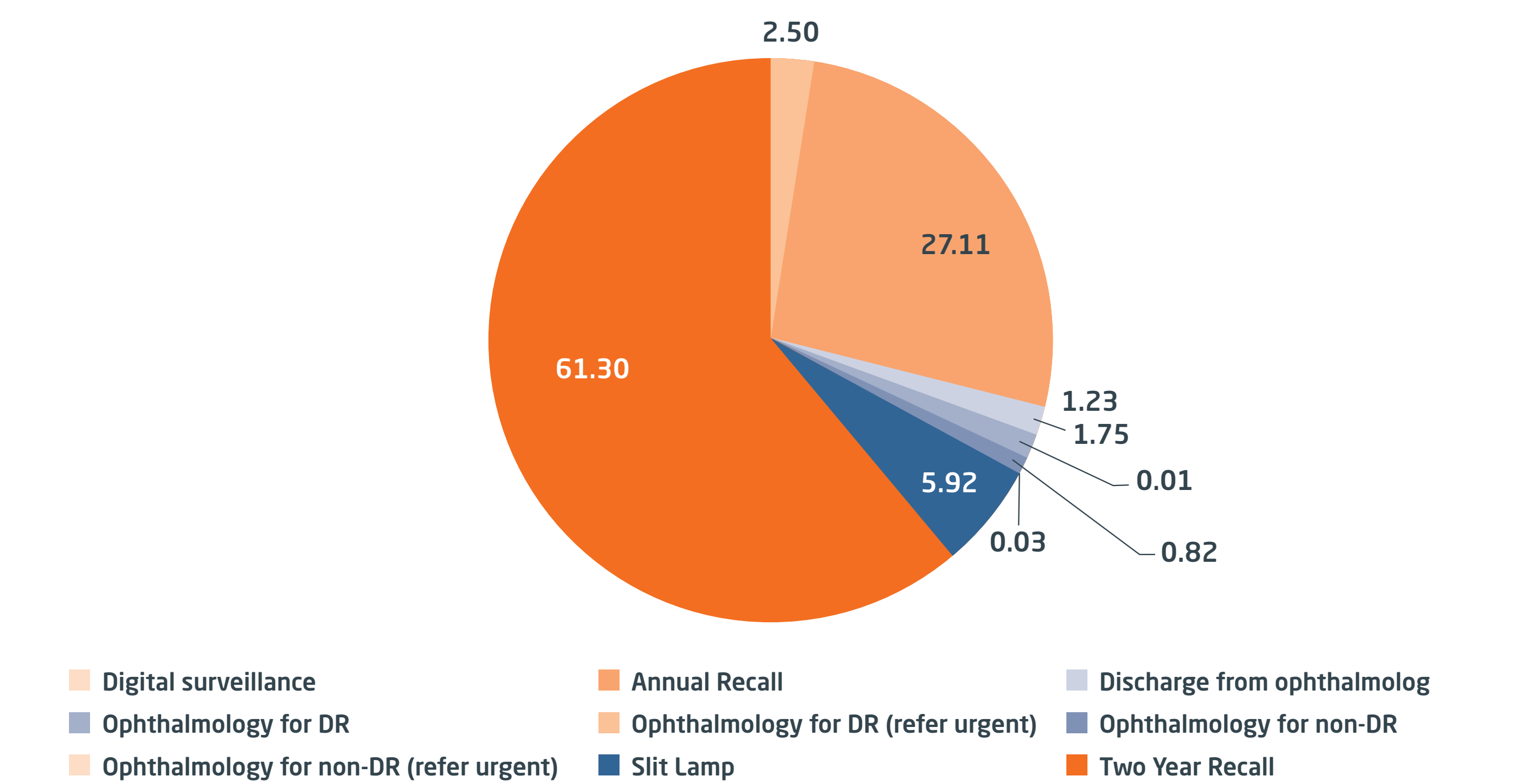


Figure 2: The last grading outcome of patients in the 2YIS pathway after 5 years in percentage.

Age Cohorts

When investigating by age cohort it was found that the highest percentage of patients still in the 2YIS pathway were within the cohorts of 50-59 years (64%), 60-69 years (67.1%) and 70-79 years (63.5%). The cohorts with the lowest percentage of patients remaining were 20-29 years (42.2%) and 30-39 years (45.8%). These findings are outlined in Figure 3.

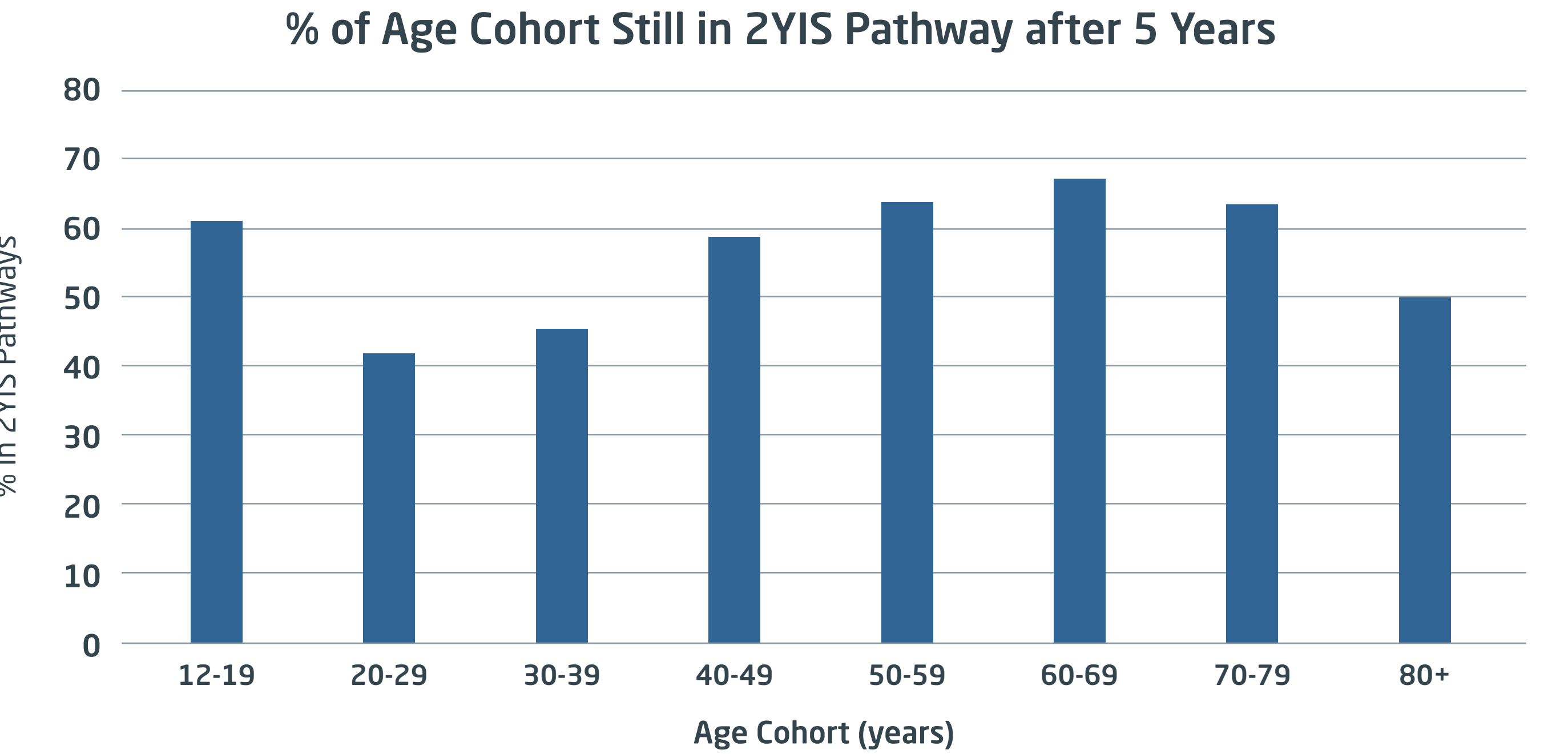


Figure 3: The percentage of patients still within the 2YIS pathway after 5 years, broken up into different age cohorts.

DNA rates

When exploring DNA rates in the 2YIS pathway, age cohorts 20-29 years and 30-39 years were found to have the highest rates of DNAs at 18.8% and 19.6% respectively, outlined in Figure 4.

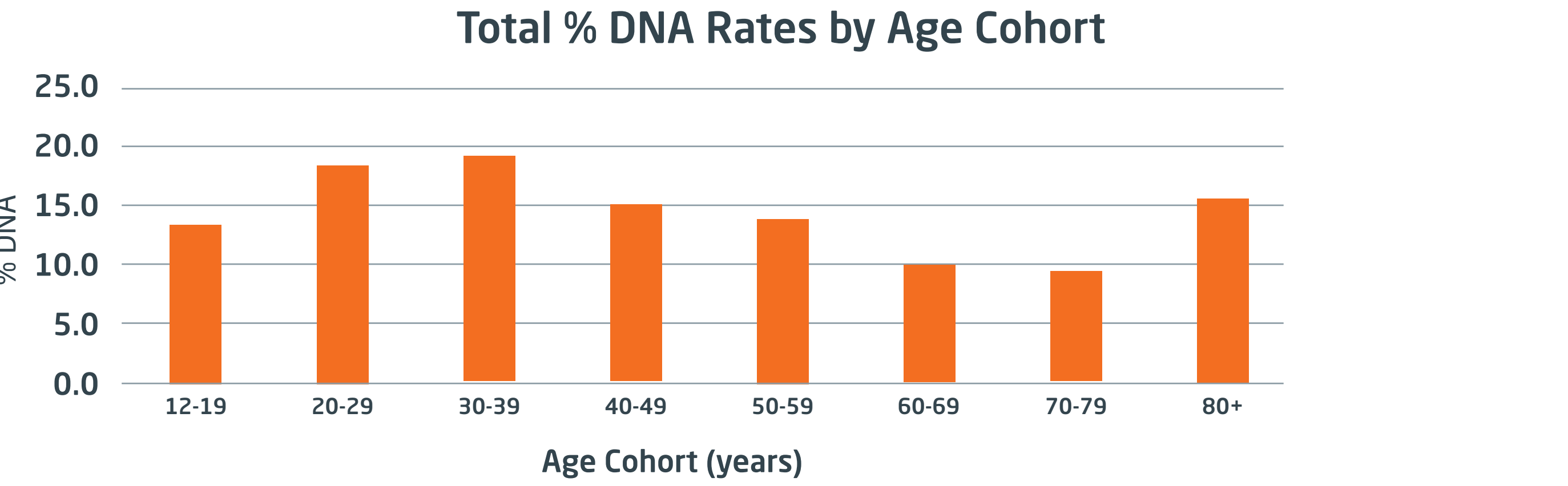


Figure 4: The total percentage of DNA rates of patients broken up into age cohorts.

These cohorts with the highest rates of DNAs were investigated according to sex, but overall, no stark difference was found. These results are outlined in Figure 5.

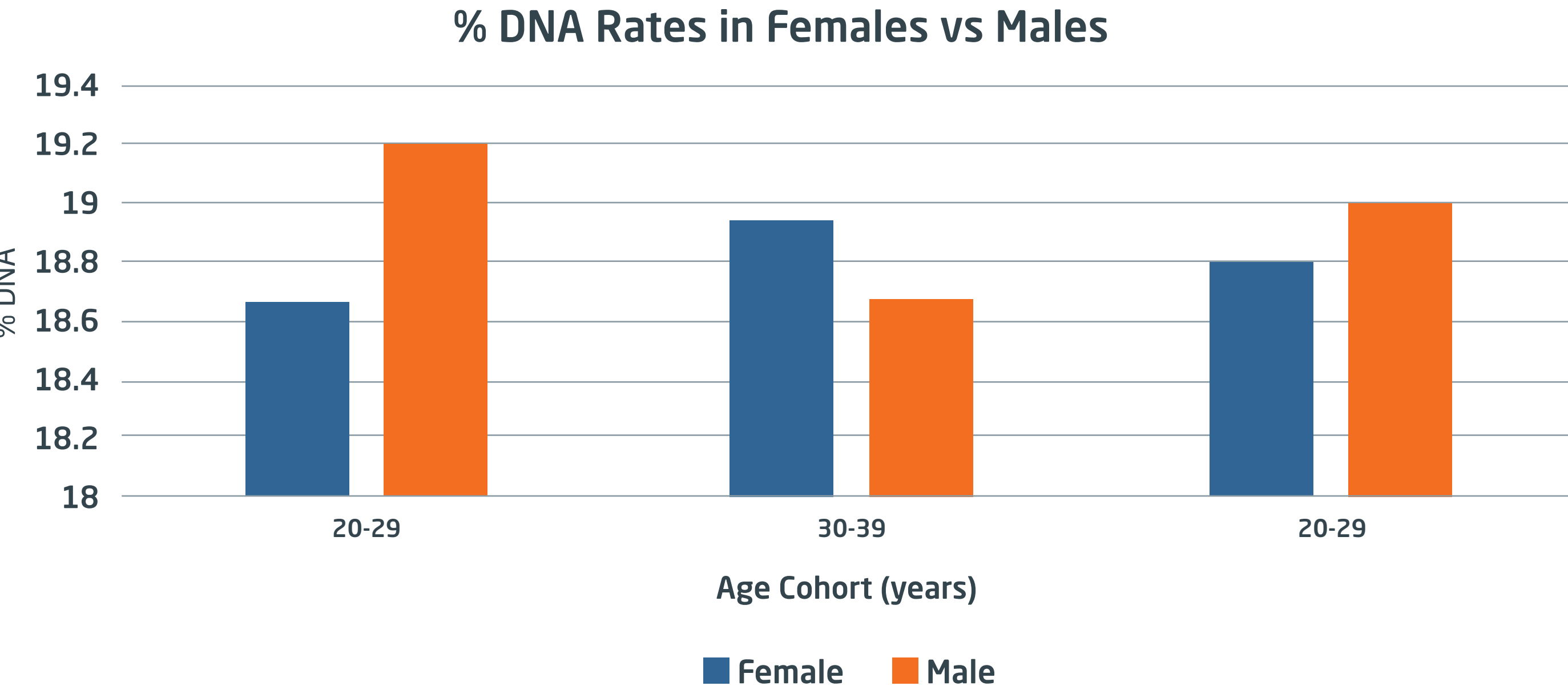


Figure 5: The percentage of DNA rates in age cohort 20-29, 30-39 and 20-39 total, broken down into female and male cohorts.

DISCUSSION

Over a five-year follow-up period, 61% of patients initially enrolled in the 2YIS pathway remained eligible for two-year recall, suggesting strong long-term retention and overall clinical safety of extended screening intervals for Diabetic Retinopathy. Stratification by age revealed higher retention rates among individuals aged 50-79 years, with the highest observed in the 60-69 (67.1%) and 70-79 (63.5%) age cohorts. In contrast, markedly lower retention was observed in younger adults (20-39 years), with only 42.2%-45.8% remaining within the 2YIS pathway.

Lower retention rates among individuals aged 20-39 may be attributable to competing life demands, such as career development, childcare responsibilities, and transitional life stages, which are known to impact healthcare engagement and appointment adherence. Targeting this age group with increased engagement and education may benefit them and encourage attendance and care of their diabetes, thus keeping them in the 2YIS pathway.

Importantly, clinical safety indicators remained favourable. Less than 0.05% of patients were referred out of 2YIS for urgent criteria (both DR and non-DR), with only 0.015% requiring urgent DR referral and 0.029% for urgent non-DR pathology. This low incidence of high-risk findings supports the continued safety of extended screening intervals in appropriately selected low-risk populations.

CONCLUSION

Overall, these results reinforce the utility of risk-based stratification in diabetic eye screening programmes. Patients aged 50-79 years appear to benefit most from the extended screening interval, with strong retention and minimal clinical risk. However, tailored strategies may be needed to improve attendance and long-term engagement among younger adults to ensure equity in screening outcomes across all age groups. Further investigation using statistical analysis will need to be undertaken to further understand the implications of the study results.

References

¹ Tracey M, Racine E, Riordaan F, et al. (2019) Understanding the uptake of a national retinopathy screening programme: an audit of people with diabetes in two large primary care centres. HRB Open Res. Available from Understanding the uptake of a national retinopathy screening programme: An audit of patients with diabetes in two large primary care centres - PubMed (nih.gov) (Accessed 25/07/2025)

² Health Information and Quality Authority (2021) Scoping report: Extended Interval Screening by the Diabetic Retina Screen Programme in Ireland. HIQA, Smithfield, Dublin 7. Available from Scoping report _Extended Interval Screening DRS_FINAL (hiqa.ie) (Accessed 25/07/2025)