Trends over 30-years in Incidence and Prevalence of Severe Sight Impairment due to Diabetes in South East Scotland

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Introduction

Diabetic eye disease is a leading cause of preventable severe sight impairment (SSI) worldwide. SSI registration in Scotland is voluntary procedure that permits access to certain state benefits and social support services. A person has SSI if they are "so blind as to be unable to perform any work for which eyesight is essential".[1] In practice this is defined as vision worse than 3/60 in the better eye, or better than 3/60 with a markedly reduced visual field.[1]

Sight impairment can result from proliferative diabetic retinopathy leading to vitreous haemorrhage and retinal detachment, and from diabetic maculopathy caused by ischaemia or exudation of fluid. Sight loss due to diabetes is considered preventable if diagnosed and treated early. Scotland's national diabetic retinopathy screening (DRS) programme was introduced in 2006, by 2010 this was screening almost 80% of eligible people with diabetes.

Scotland does not have a central record of patients with sight loss. Fife is the 3rd most populated local authority in Scotland.[2] Cormack et al found the incidence of SSI due to diabetes in Fife to be 64 per 100,000 in the population with diabetes for the decade 1990-1999.[3] Hall et al noted a downward trend in the following decade to 43 per 100,000.[4]

Liew et al reported that diabetes is no longer the leading cause of SSI in working age adults in 2009-10 across England and Wales.[5] Up to date information of recent trends in SSI certification due to diabetes informs the landscape of visual impairment locally and reflects the impact of the DRS programme.

Aims

To examine the impact of the introduction of a national diabetic retinopathy screening programme in Scotland in 2006 on incidence and trends in severe sight impairment (SSI) certification due to diabetes.

Methods

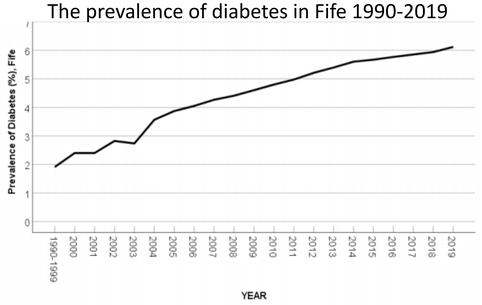
We analysed SSI certification due to diabetic eye disease in Fife, Scotland between 1st January 2010 and 31st December 2019. In Fife, people certified with SSI are included in a database held by Seescape (previously, Fife Society for the Blind).

Age, gender, date of certification and age at certification were extracted from the database. Patients provide written consent to use of anonymised data for the purpose of research at the time of certification. Mean annual incidence was compared with previous decades using Kruskal-Wallis test. Data were analysed and graphs prepared using Stata (StataCorp. College Station, TX, release 16).

Results – Demographics and Overall Picture

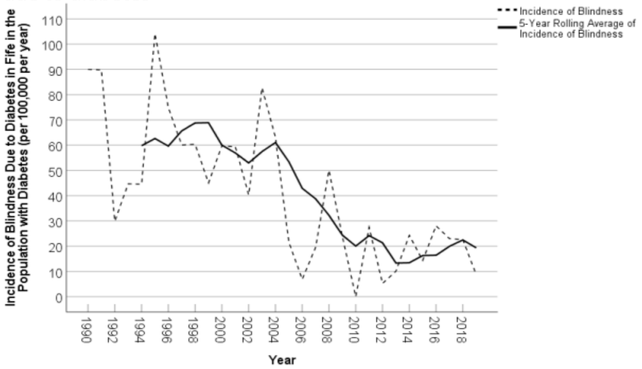
The total population of Fife rose by 2.6% from 2010 to 2019 (363,955 to 373,550), whereas the population with diabetes rose by 30.8% (17,467 to 22,854).

The prevalence of diabetes in Fife 1990-2019

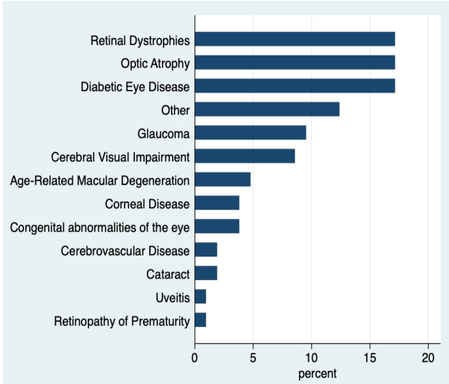


Results – Annual incidence of Severe Sight Impairment due to diabetes

Annual incidence and 5 year rolling average of SSI per 100,000 due to diabetes



Causes of SSI – Working Age Adults (16-64) (n=104)



Over 2010-2019, 475 patients were certified as SSI, of which 7.2% were certified due to diabetes (n=34). The mean age of certification was 66 years (range 26-93). Diabetic eye disease was the third commonest cause of SSI after age-related macular degeneration (54.7%) and glaucoma (10.1%).

In the working age population diabetic eye disease remains a leading cause of SSI 17.1% (18/105) alongside optic atrophy 17.1% (18/105) and retinal dystrophies 17.1% (18/105).

Average SSI incidence due to diabetes in Fife between during the decade 2010-2019 was significantly lower than previous decades (P<0.001) at 16.4 per 100,000 for the population with diabetes per year.

Forty people certified SSI due to diabetes between 1990 and 2019 were alive on 31/12/2019. The point prevalence on 31/12/2019 was 10.7 per 100,000 for the general population and 175 per 100,000 for the population with diabetes (versus 7.7 and 167 on 31/12/2009).

Conclusions

The significant reduction of annual incidence of SSI due to diabetes observed in 2010-2019 compared to previous decades provides evidence of the success of a national diabetic retinopathy screening programme in the prevention of severe sight loss. The availability of anti-VEGF for sight threatening diabetic maculopathy is a notable change in the management of diabetic eye disease, however SSI due to maculopathy is much less common and has a much smaller impact on SSI incidence compared with retinopathy screening.

Diabetes is considered a preventable cause of sight loss, yet remains a leading cause of certifiable blindness in working age adults in south east Scotland. Our findings contrast those of Liew et al[5] from England and Wales. There may have been a temporary increase in awareness of certification eligibility as a result of changes to the CVI form and associated publicity.[1] Alternatively, there may be unrecognised barriers to screening and treatment in our population to explain the geographical variation. Targeting those most at risk of sight loss is likely needed beyond screening alone to tackle this further.

In the context of a rising prevalence of diabetes a significant number of patients will suffer SSI often with devastating effects on day-to-day functioning. A multidisciplinary approach to minimise avoidable risk factors, identify high risk patients and reduce barriers to DRS uptake is essential to maintain the reduction in SSI due to diabetes.

References

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