

## **An update on the characteristics of patients attending the Kooyong low vision clinic.**

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**Background:** Since 1972, the Australian College of Optometry has worked in partnership with Vision Australia to provide multidisciplinary low vision care at the Kooyong Low Vision Clinic. In 1999 Wolffsohn and Cochrane reported on the demographic characteristics of patients attending Kooyong. Sixteen years on, the aim of this study was to review the demographics of the Kooyong patient cohort and prescribing patterns.

**Methods:** Records of all new patients (n=155) attending the Kooyong Low Vision Clinic for optometry services between April and September 2012 were reviewed retrospectively.

**Results:** Median age was 84.3 years (range 7.7 to 98.1 years) with 59% female. The majority of patients presented with late onset degenerative pathology, 49% with a primary diagnosis of age related macular degeneration. Many (47.1%) lived with family. Mean best-corrected distance visual acuity was 0.57 logMAR (SD 0.47) or approximately 6/24. The median spectacle corrected near visual acuity was N8 (range N3 to worse than N80). Fifty patients (32.3%) were prescribed new spectacles, 51 (32.9%) low vision aids, and five (8.3%) were prescribed electronic magnification devices. Almost two thirds (63.9%) were referred for occupational therapy management and 12.3% for orientation and mobility services.

**Conclusions:** The profile of patients presenting for low vision services at Kooyong is broadly similar to that identified in 1999. Outcomes appear to be similar, aside from an expected increase in electronic devices and technology solutions. However, the nature of services is changing, as treatments for eye diseases advance, and assistive technology develops and becomes more accessible. Alongside the aging population and age-related eye disease being the predominant cause of low vision in Australia, the health funding landscape is becoming more restrictive. The challenge for the future will be to provide timely, high quality care in an economically efficient model.

The Kooyong Low Vision Clinic was established in Victoria, Australia in 1972 as a partnership between the University of Melbourne Department of Ophthalmology, the Association for the Blind and the Victorian College of Optometry. It was a pioneering site for multidisciplinary low vision rehabilitation,<sup>1</sup> and continues to provide tertiary care in the changing Australian rehabilitation landscape.

It has been over 15 years since the last published analysis of patient demographics at the Kooyong Low Vision Clinic.<sup>2</sup> Several factors have changed since that time. In 1999, the clinic was operated by Vision Australia Foundation (VAF). While optometry services continue to be provided by the Australian College of Optometry (renamed from Victorian College of Optometry in 2009), a number of blindness agencies, including VAF, merged to form Vision Australia in 2005. The resultant larger, multi-state organisation has new strategies, which gave rise to significant changes to the Australian low vision landscape. Examples of changes include decentralisation of services and an emphasis on patient centred intervention.

Vision Australia's current multidisciplinary services include low vision clinics (optometry and orthoptics), library services, recreation services, technology advice and training, orientation and mobility training, social and emotional support and employment services. Optometry low vision clinic appointments are preceded by telephone intake, and usually followed by occupational therapy assessment. Occupational therapy clinic appointments include detailed needs assessment, discussion of other services, exploration of lighting, demonstration of adaptive techniques and technology, and onward referral for other rehabilitative services.

The Victorian population is growing and aging. Data from the Australian Bureau of Statistics indicate that in the past 15 years the number of Victorians has increased from approximately 4.7 million to 5.9 million, and the number aged over 40 years has increased from approximately 1.8 to 2.5 million.<sup>3</sup> Age-related eye diseases (particularly age related macular degeneration

(AMD), glaucoma and diabetic retinopathy) are predominant cause of irreversible vision impairment.<sup>4</sup> The development and application of anti-Vascular Endothelial Growth Factor (anti-VEGF) agents has impacted the ability of ophthalmology to treat and manage patients with neovascular AMD. While landmark clinical trials including the MARINA study established that the anti-VEGF agent ranibizumab (Lucentis®, Novartis) can improve visual acuity, some 10% of patients will get worse and many (58%) will still have mild to moderate vision impairment (visual acuity below 6/12, i.e. below the driving standard) and could potentially derive much benefit from low vision intervention.<sup>5</sup> However, it is possible that patients may hold the mistaken belief that active anti-VEGF treatment renders rehabilitation unnecessary or inappropriate.

Advances in technology, increased availability and reduced cost of mainstream technology have had a flow-on effect into the assistive technology domain for people with vision impairment.<sup>6</sup> In particular, touch-screen technology and portable electronic devices (tablet computers and smart phones) with accessibility features for those with vision impairment are now widespread and more affordable.

It is likely that the aging population, development of new medical treatments and improved patient access to technology may impact both the demographic of Kooyong patients and the interventions prescribed. Updated data are required to facilitate planning and service delivery.

This study aimed to determine the basic demographic characteristics of Kooyong low vision clinic patients and prescribing patterns.

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## Methods

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A retrospective audit of electronic records for all new patients attending Kooyong optometry low vision clinic between 1 April and 30 September 2012 was undertaken. The study adhered to the tenets of the Declaration of Helsinki, and was approved by the Australian College of Optometry Human Research Ethics Committee (H15 002). Data were analysed using Microsoft Excel version 14.1.2 (Microsoft Corporation, Redmond, USA). To compare referral types from this study to a previous study, the chi-square test was used.

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## Results

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The sample comprised 155 new patients, of which 92 (59.3%) were female and 63 (40.7%) male. Median age at time of presentation was 84.3 years (range 7.7 to 98.1), with the predominant patient profile being a female aged in her 80s (27.1% of the cohort) (Figure 1). Analysis of basic demographic characteristics (Table 1) revealed that most patients lived either with a family member (47.1%) or alone (39.3%). Predominant causes of vision impairment were age-related (Table 2).

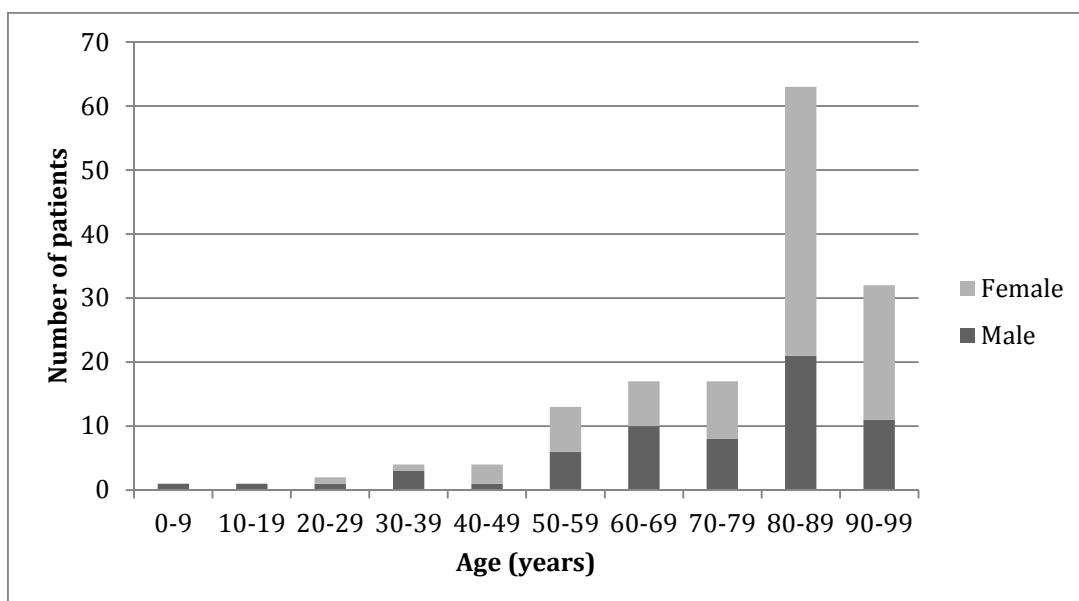


Figure 1. Age and gender distribution of patients attending Kooyong low vision clinic

Table 1. Living situation and referral sources of sample by age category

	<b>Age 0-29 yrs n (%)</b>	<b>Age 30-59 yrs n (%)</b>	<b>Age 60 yrs + n (%)</b>	<b>Total n (%)</b>
<b>Living Situation</b>				
Alone	0 (0.0)	2 (1.3)	59 (38.0)	61 (39.4)
With family	4 (2.6)	16 (10.3)	53 (34.2)	73 (47.1)
With others (including residential aged care)	0 (0.0)	2 (1.3)	13 (8.4)	15 (9.7)
Unknown	0 (0.0)	1 (0.6)	5 (3.2)	6 (3.9)
<b>Referral Source</b>				
Ophthalmologist/hospital	0 (0.0)	4 (2.6)	31 (20.0)	35 (22.6)
Optometrist	0 (0.0)	0 (0.0)	4 (2.6)	4 (2.6)
Self	1 (0.6)	15 (9.7)	51 (32.9)	67 (43.2)
Family/friend	2 (1.3)	0 (0.0)	22 (14.2)	24 (15.5)
Other – accommodation/health service	0 (0.0)	0 (0.0)	5 (3.2)	5 (3.2)
Unknown	1 (0.6)	2 (1.3)	17 (11.0)	20 (12.9)

Mean best presenting distance visual acuity was 0.64 logMAR (SD 0.46) or approximately 6/24. Mean best-corrected distance visual acuity (BCVA) was 0.57 logMAR (SD 0.47) or approximately 6/19. Based on BCVA, 31 (20%) of patients were legally blind (defined as best corrected visual acuity poorer than 6/60 in Australia). For five patients, presenting distance visual acuity could be improved by at least 0.3 logMAR (3 rows of letters) through the provision of new spectacle correction. Fifty-nine patients achieved better than 0.3 logMAR (6/12) with refraction. The median best spectacle corrected near visual acuity was N8 (range N2 to poorer than N80).

Table 2. Primary cause of vision impairment

<b>Diagnosis</b>	<b>n (%)</b>
Age related macular degeneration	76 (49.0)
Glaucoma	16 (10.3)
Diabetic retinopathy	8 (5.2)
Retinitis pigmentosa	8 (5.2)
Cataract	8 (5.2)
Acquired brain injury	7 (4.5)
Other retinal disease	6 (3.9)
Congenital macular disease	5 (3.2)
Other optic nerve/visual pathway disease	3 (1.9)
Myopia	3 (1.9)
Eye movement/ alignment disorder	2 (1.3)
Corneal disease	1 (0.6)
Other/unspecified	12 (7.7)

Mean binocular peak contrast sensitivity (Melbourne Edge Test) was 13 dB (SD 4) among the 127 patients for whom this visual function was recorded. This represents a moderate reduction in contrast. Focal lighting evaluation was undertaken in 111 patients (71.6%), and was found to assist 104 (93.7%) of these patients. This brief evaluation involved demonstrating the use of a focal task light for reading and recording its effect on both the patient's subjective response and near visual acuity.

Spectacles were prescribed for 50 patients (Table 3). Among the sample, 82 (52.9%) were already using some type of magnification device. Magnifiers were prescribed to 51 patients (Table 3). Six patients were prescribed more than one magnifying device. A small number of anti-glare devices were prescribed (eight). In all age categories, hand-held magnifiers were the most popular magnification device. Interestingly, four out of five patients who were prescribed electronic devices were aged 60 years or older. Of the five patients prescribed an electronic device, all of which were portable, the BCVA varied from 0.40 logMAR (6/15) to 2.16

logMAR (6/750), with four of the five worse than 1.0 logMAR (6/60). One patient was also prescribed a 4x loupe, another was also prescribed a 7x pocket magnifier and another a maxTV

Table 3. Prescribed optical devices

Type of device	Device	n (% of type)
<b>Spectacles</b>		61
	Single vision distance	15 (24.6)
	Single vision near (up to +4.50D add)	24 (39.3)
	Single vision near (+4.75D add and higher)	6 (9.8)
	Single vision intermediate	1 (1.6)
	Bifocal (Add < 4.25)	13 (21.3)
	Progressive (Add < 4.25)	2 (3.3)
<b>Magnifiers</b>		60
	Hand magnifier	30 (50)
	Stand magnifier	11 (18.3)
	Visulette	7 (11.7)
	Loupe	1 (1.7)
	Monocular telescope	1 (1.7)
	Binoculars	5 (8.3)
	Electronic magnifier	5 (8.3)
<b>Anti-Glare devices</b>		8

Ninety-nine (63.9%) patients were referred to the occupational therapist following their optometry appointment. Twenty-two patients (14.2%) declined or did not require occupational therapy assistance, with the remainder of records incomplete on the matter. Sixteen patients (10.3%) were specifically referred for orientation and mobility assistance.

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## Discussion

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The 'typical' Kooyong low vision clinic patient was an older adult female with AMD.

Kooyong patients in the older age bracket (60 years and over) tended to live at home either alone or with family, and were either self or family referred. Hand magnifiers were the most common low vision aid prescribed.

For the six-month period of this study, 155 new patients attended the Kooyong Low Vision Clinic, compared to 295 in 1998 for the same period of time<sup>2</sup>. This is not an artefact of the retrospective nature of this study, but likely to reflect a reduction in sessions and patient numbers attending the Kooyong clinic. While this might in part be due to decentralised Vision Australia services in Victoria, it is unlikely to be the main reason. Unpublished ACO data for the time periods indicate that the number of patients attending Vision Australia for comprehensive assessment has declined throughout Victoria; with an 87.3% reduction at Kooyong, 59.2% reduction in metropolitan clinics and 28.3% reduction in regional clinics. Thus the decline in Kooyong is not fully explained by the creation of satellite clinics or the decentralisation of Vision Australia services. Reasons for reduced patient numbers presenting for low vision care have been proposed most recently by the Optometry Australia Low Vision Working Group<sup>7</sup> and include fewer referrals, lack of awareness of low vision services among ophthalmologists, lack of public awareness, reduced provision of low vision services by optometrists, and the impact of new treatments.

Over the past decade or so, there has been an increase in self/family referrals and a decrease in ophthalmology referrals. For example, of those aged 60 years or over, self referrals comprised 6% in 1998<sup>2</sup> compared with 39% in 2012 ( $P < 0.001$ ), and referrals from ophthalmology comprised 76% in 1998<sup>2</sup> compared with 15% in 2012 ( $P < 0.001$ ). This may be confounded by



differences in reporting methods and possibly a decline in marketing to ophthalmology, but may also represent a shift in attitude to disability and aging. It may be that patients and families are better able to advocate for themselves and now drive their own access to rehabilitation and contact with rehabilitation agencies. Rehabilitation agencies need to increase advocacy on the importance of low vision services to all potential referral sources, including patients, their families and ophthalmologists.

Mean BCVA of patients attending Kooyong has improved over the years. It was 6/44 in 1980 and 6/34 in 1987<sup>8</sup>, then 6/30 in 1998<sup>2</sup> and 6/19 in 2012. While the change in the 1980s was attributed to earlier referral, this is unlikely to be the reason for the improvement from 1998 to 2012. From 1998 to 2012 there was little change in median patient age, the proportion of legally blind patients presenting and contrast sensitivity. Rather, the development and widespread availability of anti-VEGF treatments for AMD may have contributed to the shift in mean visual acuity of patients attending for services. In future, it would be interesting to investigate the proportion of patients attending low vision clinics that have been or are being actively treated with antiVEGF agents.

There are some limitations of this study, primarily it being a retrospective clinical audit. Data for some variables were missing or incomplete, or may have been inaccurate.

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## Conclusions

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There have been few changes in the presenting demographic and clinical findings of patients attending the Kooyong Low Vision Clinic over the last 16 years. This study has presented the characteristics of patients attending the Kooyong Low Vision Clinic. It has confirmed that although these patients still prefer traditional aids such as spectacles or simple magnifiers, they

are becoming increasingly comfortable with technology and electronic vision enhancement devices. Future service planning predominantly aimed at retired patients, living at home with a moderate level of vision loss due to AMD, is required.

As a result of the aging Australian population and high proportion of age related disease in the low vision population, increased demand on low vision services is predicted for coming years.<sup>9</sup> However alongside this increase, the health funding landscape is become more restrictive. The challenge for the future will be to continue to provide timely, high quality low vision services to increased numbers of patients in an economically efficient model.

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