

Cataract surgery coverage rates for Indigenous and non-Indigenous Australians: the National Eye Health Survey

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The known The incidence of cataract is increasing among Indigenous and non-Indigenous Australians because of the ageing of the population. The burden of vision loss is considerably higher among Indigenous Australians, partly because of a 12-fold higher prevalence of vision loss associated with unoperated cataracts.

The new The cataract surgery coverage rate is significantly lower among Indigenous than non-Indigenous Australians. The difference was greater when using the definition of vision loss as visual acuity worse than 6/12, rather than the WHO definition of best-corrected visual acuity worse than 6/18.

The implications The availability and use of cataract services in Indigenous communities should be improved.

Cataract surgery is the most common elective surgical procedure around the world, with an average annual global treatment cost of US\$573 million.¹ In Australia, 229 693 operations were performed during 2013–14.² Growth in demand for cataract surgery is driven by the increasing prevalence of cataract associated with population ageing, coupled with improvements in the safety and efficacy of the procedure.^{3–5}

As cataract is the leading cause of blindness (51% of cases internationally)⁶ and surgery usually restores vision,⁷ the World Health Organization selected cataract surgery coverage rates as core indicators of the success of its “Universal eye health: a global action plan 2014–2019”, a program that aims to eliminate avoidable blindness.⁸ Consequently, it is imperative that signatory nations, including Australia, document cataract surgery coverage rates. The WHO defines the coverage rate as the proportion of people with both bilateral cataract and vision impairment (VI) or blindness — visual acuity worse than 6/18; that is, not able to read letters on a chart at 6 metres that a person with normal vision (6/6 vision) can read at 18 metres — who have had their vision corrected by cataract surgery on one or both eyes.⁸ However, given that cataract surgery may be clinically indicated for people with visual acuity better than 6/18 and that the definition of VI varies between countries, the definition of the coverage rate may need revision.^{9,10}

Cataract surgery coverage rates may vary across the Australian population. There is significant heterogeneity in the availability and uptake of eye health services, including cataract surgery, for Indigenous and non-Indigenous Australians, and for people in areas of different geographic remoteness.^{11–13} A recent assessment of variations in waiting times for surgery by remoteness found that the disparity for cataract surgery was greater than for any other surgical procedure.² As eye health surveys have not adequately stratified the non-Indigenous population by remoteness, it is unknown whether their cataract surgery coverage rates vary

Abstract

Objective: To determine cataract surgery coverage rates for Indigenous and non-Indigenous Australians.

Design: National cross-sectional population-based survey.

Setting: Thirty randomly selected Australian geographic sites, stratified by remoteness.

Participants: 3098 non-Indigenous Australians aged 50 years or more and 1738 Indigenous Australians aged 40 years or more, recruited and examined in the National Eye Health Survey (NEHS) between March 2015 and April 2016.

Methods: Participants underwent an interviewer-administered questionnaire that collected socio-demographic information and past ocular care history, including cataract surgery. For those with visual acuity worse than 6/12, anterior segment photography and slit lamp examinations were conducted.

Main outcome measures: Cataract surgery coverage rates according to WHO and NEHS definitions; associated risk factors.

Results: Cataract surgery coverage rates calculated with the NEHS definition 1 of vision impairment (visual acuity worse than 6/12) were lower for Indigenous than non-Indigenous participants (58.5% v 88.0%; odds ratio [OR], 0.32; $P < 0.001$). According to the World Health Organization definition (eligibility criterion: best-corrected visual acuity worse than 6/18), coverage rates were 92.5% and 98.9% for Indigenous and non-Indigenous Australians respectively. Greater age was significantly associated with higher cataract surgery coverage in Indigenous (OR, 1.41 per 10 years; $P = 0.048$) and non-Indigenous Australians (OR, 1.58 per 10 years; $P = 0.004$).

Conclusions: The cataract surgery coverage rate was higher for non-Indigenous than Indigenous Australians, indicating the need to improve cataract surgery services for Indigenous Australians. The WHO definition of the coverage rate may overestimate the cataract surgery coverage rate in developed nations and should be applied with caution.

according to geographic location or other socio-demographic and health factors.

In this article, we report the cataract surgery coverage rates and risk factors identified by the first Australian National Eye Health Survey (NEHS). The appropriateness of how cataract surgery coverage rates are defined in the Australian context is also discussed.

Methods

Participant sampling

The sampling methodology of this study is described in detail elsewhere.¹⁴ In summary, Australian census 2011 data were used

to randomly select 1738 Indigenous Australians aged 40 years or more and 3098 non-Indigenous Australians aged 50 years or more from 30 different geographic sites between March 2015 and April 2016. The younger age for selecting Indigenous participants reflects the earlier onset and more rapid progression of eye disease in this population.¹⁵ Population clusters were stratified by remoteness of residence (Major City, Inner Regional, Outer Regional, Remote, and Very Remote). Trained recruiters visited each household and enrolled participants with a standard script. Based on consultations with local Aboriginal medical services and community elders, methodological adjustments (eg, telephone and word-of-mouth recruitment, as well as recruitment from nearby health clinics) were required to adapt recruitment procedures to local circumstances at each site.

Examination protocol

A standardised interviewer-administered questionnaire was used to collect data on socio-demographic factors, stroke and diabetes history, past ocular history, and eye care service history. Examiners asked participants whether they had ever been told by a health practitioner that they had cataracts, whether they had ever undergone cataract surgery, and on which eyes and how long ago (in years and months). A trained examiner then performed a series of eye tests, including visual acuity measurement with pinhole and auto-refraction in those with visual acuity (VA) worse than 6/12, anterior segment assessment, intraocular pressure testing, perimetry, and fundus photography. VI was defined as bilateral presenting visual acuity (PVA) worse than 6/12, measured with a logMAR chart at 3 metres. Participants with VI in either or both eyes had anterior segment photographs of the impaired eyes taken with a Digital Retinography System (DRS) camera (CenterVue) to determine whether vision loss was caused by anterior segment pathology. Verbal feedback about test results was provided, and participants were referred to a local doctor or optometrist if abnormalities were detected.

Identifying cataracts

Two graders independently assessed anterior segment photographs and fundus photographs taken with a DRS camera to categorise participants into one of three groups: no cataract; probable cataract; or definite cataract. High inter-rater reliability (85%) and intra-rater reliability (94% and 96%) were achieved. Discrepancies were adjudicated by an ophthalmologist. In cases where photographs were unavailable, a cataract grade was assigned on the basis of an anterior segment examination by a trained clinician using a handheld slit lamp (Keeler Ophthalmic Instruments). Participants with probable or definite cataract were deemed to have cataracts for the purposes of this study.

Cataract surgery coverage rates

Cataract surgery coverage rates were calculated with the formula:

$$\text{Cataract surgery coverage rate} = \left(\frac{n_1}{n_1 + n_2} \right) \times 100$$

The numerator n_1 was the number of participants who reported that they had undergone cataract surgery on one or both eyes. The value for n_2 , the number of eligible patients with unoperated cataract, varied according to the definition of eligibility for cataract surgery:

- *WHO definition*: participants with bilateral best-corrected visual acuity (BCVA) of worse than 6/18 and bilateral cataracts;

- *NEHS definition 1*: participants with bilateral PVA worse than 6/12 with cataract in one or both eyes;
- *NEHS definition 2*: participants with BCVA of worse than 6/12 with cataract in one or both eyes.

Risk factor analysis could not be undertaken with the WHO definition because the sample size for n_2 was insufficient (nine non-Indigenous and 16 Indigenous Australians). NEHS definition 1 was selected as the most clinically appropriate for the Australian population, as many Australians undergo cataract excision with PVAs better than 6/12,¹⁶ and was applied in our risk factor analysis.

Statistical analysis

Socio-demographic variables were assessed for participants who had undergone cataract surgery and for those with bilateral vision loss and unoperated cataract. For NEHS definition 1 and the WHO definition, coverage rates were disaggregated by age, sex, place of birth, language spoken at home (English *v* other), and geographic remoteness. Associations between cataract surgery and the following covariates were examined in multivariable logistic regression: Indigenous status, age, sex, education, language spoken at home, and geographic remoteness. Given the differences in inclusion criteria for Indigenous and non-Indigenous participants, regression was performed separately for each population. Adjusted coverage rates by age derived from logistic regression were plotted for Indigenous and non-Indigenous participants. All analyses were adjusted for sampling weights and non-response. Associations were deemed statistically significant if $P < 0.05$ (two-tailed). Stata 14.2 (StataCorp) was used for all analyses.

Ethics approval

Ethics approval was obtained from the Royal Victorian Eye and Ear Hospital (RVEEH) Human Research Ethics Committee (reference, HREC-14/1199H). Additional ethics approval was obtained from the Aboriginal Health and Medical Research Council of New South Wales (reference, HREC-1079/15), the Menzies School of Health Research (reference, HREC-2015-2360), the Aboriginal Health Council of Western Australia (reference, HREC-622), and the Aboriginal Health Council of South Australia (reference, HREC-04-15-604). Participants provided written informed consent. This study was conducted in accordance with the tenets of the Declaration of Helsinki.

Results

Study participants

In total, 1738 Indigenous Australians aged 40–92 years (mean, 55.0 years; standard deviation [SD], 10.0 years) and 3098 non-Indigenous Australians aged 50–98 years (mean, 66.6 years; SD, 9.7 years) from 30 sites were examined. Of these, 142 Indigenous Australians (8.2%) and 631 non-Indigenous Australians (20.4%) reported that they had undergone cataract surgery in at least one eye (n_1). Eighty-nine Indigenous Australians (5.1%) and 89 non-Indigenous Australians (2.9%) had bilateral VI or blindness (PVA worse than 6/12) with unoperated cataract in at least one eye (n_2 for NEHS definition 1) (Box 1). For NEHS definition 2, n_2 was 65 for non-Indigenous Australians and 69 for Indigenous Australians, as 20 Indigenous and 24 non-Indigenous participants had BCVA values better than or equal to 6/12. According to the WHO definition, seven Indigenous Australians and nine non-Indigenous Australians were included in n_2 .

1 Demographic characteristics of participants who had undergone cataract surgery (self-report) and participants with vision impairment or blindness and unoperated cataract (National Eye Health Survey definition 1)

	Indigenous participants		Non-Indigenous participants	
	No surgery*	Surgery [†]	No surgery	Surgery
Number of participants	89	142	89	631
Continuous variables				
Age (years), mean (SD)	64.4 (8.9)	66.3 (10.2)	72.7 (9.5)	75.8 (8.7)
Education (years), mean (SD)	9.0 (3.6)	9.5 (3.7)	11.1 (3.8)	11.6 (3.8)
Categorical variables				
Sex (men)	27 (30%)	69 (49%)	45 (51%)	279 (44.2%)
English spoken at home	80 (90%)	135 (95%)	83 (93%)	590 (93.5%)
Self-reported diabetes mellitus	52 (58%)	81 (57%)	12 (14%)	130 (20.6%)
Place of birth				
Oceania	89 (100%)	142 (100%)	56 (63%)	440 (69.7%)
Europe	0	0	27 (30%)	145 (23.0%)
Other	0	0	6 (7%)	46 (7.3%)
Remoteness				
Major city	29 (33%)	49 (34%)	35 (39%)	228 (36.1%)
Inner regional	13 (15%)	29 (20%)	13 (15%)	141 (22.4%)
Outer regional	33 (37%)	44 (31%)	23 (26%)	148 (23.5%)
Remote	7 (8%)	17 (12%)	12 (14%)	74 (12%)
Very remote	7 (8%)	3 (2%)	6 (7%)	40 (6.3%)

SD = standard deviation. * Participants with unoperated cataract in one or both eyes and presenting visual acuity of worse than 6/12. † Participants who have had cataract surgery in one or both eyes. ◆

Overall cataract surgery coverage rates

According to the WHO definition, the cataract surgery coverage rate among Indigenous Australians was 95.3% (sampling-adjusted rate, 92.5%; 95% confidence interval [CI], 74.6–98.1%); among non-Indigenous Australians, it was 98.6% (sampling-adjusted rate, 98.9%; 95% CI, 97.1–99.6%; for difference, $P = 0.01$) (Box 2). According to NEHS definition 1, coverage rates were 61.5% (sampling-adjusted rate, 58.5%; 95% CI, 49.8–66.8%) for Indigenous Australians and 87.6% (sampling-adjusted rate, 88.0%; 95% CI, 84.5–90.6%) for non-Indigenous Australians ($P < 0.001$). According to NEHS definition 2, coverage rates were 67.3% (sampling-adjusted rate, 64.8%; 95% CI, 53.5–74.6%) for Indigenous Australians and 90.7% (sampling-adjusted rate, 91.4%; 95% CI, 88.5–93.7%) for non-Indigenous Australians ($P < 0.001$). The results discussed below are based on rates according to NEHS definition 1.

Factors that influence cataract surgery coverage rates

Indigenous Australians were less likely to have undergone cataract surgery than non-Indigenous Australians (odds ratio [OR]; 0.32; $P < 0.001$). The odds of cataract surgery increased with age for both Indigenous (OR, 1.41 per decade; 95% CI, 1.01–1.99; $P = 0.048$) and non-Indigenous Australians (OR, 1.58 per decade; 95% CI, 1.17–2.13; $P = 0.004$) (Box 3, Box 4). For Indigenous Australians, rates increased from 43% for those aged 40–49 years to 63% for those aged 80 years or more; for non-Indigenous Australians, rates increased from 66% for those aged 50–59 years to 92% for those aged 80 years or more (Box 2). Longer education was associated with higher cataract surgery coverage rates for Indigenous Australians (OR, 1.09 per year; 95% CI, 1.01–1.19; $P = 0.034$), but not for non-Indigenous participants (Box 3).

Geographic remoteness did not significantly affect cataract surgery coverage rates among non-Indigenous Australians, with high rates across all levels of remoteness (Box 2). Greater variation was observed in the coverage rates for Indigenous Australians, from 28% in Very Remote to 78% in Remote areas, although these differences were not statistically significant (Box 2, Box 3).

Discussion

We have reported the cataract surgery coverage rates for Indigenous and non-Indigenous Australians across all levels of geographic remoteness in Australia, and identified socio-demographic factors associated with cataract surgery.

Cataract surgery coverage rates varied according to the definition applied. According to the WHO definition, rates were well above the 85% recommended by the International Agency for the Prevention of Blindness for both Indigenous (92.5%) and non-Indigenous (98.9%) people.⁵ However, the WHO definition is more relevant to developing nations where service availability is poor, rates of vision loss are high, and surgery is not routinely performed on people without profound vision loss. In Australia, cataract surgery is often performed on individuals with visual acuities better than or equal to 6/12,¹⁶ and it is therefore likely that a substantial proportion of the participants who had undergone surgery had better pre-operative vision than the 6/18 BCVA level in the WHO definition.

The NEHS definitions set 6/12 as the threshold VA level. This is consistent with the bulk of cataract surgery research in Australia, and also corresponds with the minimum legal sight requirement for driving a motor vehicle in Australia.^{17–20} NEHS definition 2, which uses BCVA rather than PVA, may be less relevant in the

2 Cataract surgery coverage rates and sampling-adjusted coverage rates according to the National Eye Health Survey (NEHS) and World Health Organization definitions

	NEHS definition 1*						WHO definition†					
	Indigenous			Non-Indigenous			Indigenous			Non-Indigenous		
	<i>n</i> ₂	<i>n</i> ₁ ‡	Adjusted rate§ (95% CI)	<i>n</i> ₂	<i>n</i> ₁ ‡	Adjusted rate (95% CI)	<i>n</i> ₂	<i>n</i> ₁ ‡	Adjusted rate§ (95% CI)	<i>n</i> ₂	<i>n</i> ₁ ‡	Adjusted rate (95% CI)
All participants	89	142 (61.5%)	58.5% (49.8–66.8%)	89	631 (87.6%)	88.0% (84.5–90.6%)	7	142 (95.3%)	92.5% (74.6–98.1%)	9	631 (98.6%)	98.9% (97.1–99.6%)
Age (years)												
40–49	7	7 (50%)	43% (26–62%)	–	–	–	0	7 (100%)	–	–	–	–
50–59	16	32 (67%)	62% (45–77%)	8	22 (73%)	66% (46–82%)	2	32 (94%)	88% (53–98%)	1	22 (96%)	99% (95–100%)
60–69	43	47 (52%)	50% (39–61%)	23	139 (85.8%)	88% (83–92%)	4	47 (92%)	89% (66–97%)	0	139 (100%)	–
70–79	19	43 (69%)	73% (60–83%)	36	230 (86%)	86% (79–92%)	0	43 (100%)	98% (83–100%)	3	230 (99%)	98% (95–100%)
≥ 80	4	13 (76%)	63% (43–79%)	22	240 (92%)	92% (88–95%)	0	13 (100%)	–	5	240 (98%)	99% (96–100%)
Sex												
Women	62	73 (54%)	52% (41–62%)	44	352 (89%)	88% (83–92%)	4	73 (95%)	92% (72–98%)	4	352 (99%)	99% (95–100%)
Men	27	69 (72%)	69% (57–79%)	45	279 (86%)	88% (82–92%)	3	69 (96%)	94% (72–99%)	5	279 (98%)	99% (97–100%)
English spoken at home												
No	9	7 (44%)	43% (31–57%)	6	41 (87%)	85% (76–92%)	1	7 (88%)	94% (63–99%)	0	41 (100%)	–
Yes	80	135 (63%)	60% (51–68%)	83	590 (88%)	88% (85–91%)	6	135 (96%)	92% (73–98%)	9	590 (99%)	99% (97–100%)
Place of birth												
Oceania	–	–	58% (50–67%)	56	440 (89%)	89% (85–92%)	–	–	92% (74–98%)	5	440 (99%)	99% (97–100%)
Europe	–	–	–	27	145 (84%)	85% (79–89%)	–	–	–	4	145 (97%)	98% (95–99%)
Other	–	–	–	6	46 (88%)	87% (75–94%)	–	–	–	0	46 (100%)	–
Remoteness												
Major city	29	49 (63%)	62% (49–73%)	35	228 (87%)	87% (82–90%)	1	49 (98%)	97% (80–100%)	3	228 (99%)	98% (95–100%)
Inner regional	13	29 (69%)	68% (56–79%)	13	141 (92%)	92% (85–96%)	1	29 (97%)	97% (86–99%)	0	141 (100%)	–
Outer regional	33	44 (57%)	57% (37–75%)	23	148 (87%)	87% (78–92%)	1	44 (98%)	98% (90–100%)	3	148 (98%)	98% (95–99%)
Remote	7	17 (71%)	78% (41–95%)	12	74 (86%)	87% (70–95%)	2	17 (90%)	92% (71–98%)	3	74 (96%)	97% (88–99%)
Very remote	7	3 (30%)	28% (4.8–74%)	6	40 (87%)	87% (77–93%)	2	3 (60%)	54% (1.9–99%)	0	40 (100%)	–

CI = confidence interval; NEHS = National Eye Health Survey; WHO = World Health Organization. * *n*₁ = participants who reported cataract surgery in at least one eye; *n*₂ = participants with unoperated cataract in at least one eye and bilateral presenting visual acuity worse than 6/12. † *n*₁ = participants who reported cataract surgery in at least one eye; *n*₂ = participants with unoperated cataract in both eyes and bilateral best-corrected visual acuity worse than 6/18. ‡ Percentage of all participants in group is given in parentheses. ◆

Australian context than NEHS definition 1, as patients with cataracts and corrected VA better than or equal to 6/12 may still undergo surgery;⁹ excluding these individuals from the denominator may therefore lead to overestimating population coverage rates. Consequently, NEHS definition 1, in which all participants with cataract and presenting bilateral VI were included in the denominator, is probably more apposite for analysis, policy formulation, and resource allocation in Australia. According to this definition,

the coverage rate for Indigenous Australians is lower than appropriate.

Earlier research reported a 12-fold higher prevalence of blindness from cataract in Indigenous communities, and it has been suggested that the much lower rates of cataract surgery among Indigenous — nationally, the rate of hospitalisation for cataract among non-Indigenous Australians was more than six times

3 Logistic regression analysis of risk factors associated with cataract surgery in non-Indigenous and Indigenous Australians with vision impairment or blindness and cataract in at least one eye

Characteristic	Indigenous Australians (n = 231)				Non-Indigenous Australians (n = 720)			
	Univariate analysis		Multivariable analysis		Univariate analysis		Multivariable analysis	
	Odds ratio (95% CI)	P	Odds ratio (95% CI)	P	Odds ratio (95% CI)	P	Odds ratio (95% CI)	P
Age (per decade)	1.24 (0.94–1.62)	0.12	1.41 (1.01–1.99)	0.048	1.47 (1.14–1.90)	0.003	1.58 (1.17–2.13)	0.004
Sex (men v women)	2.07 (1.11–3.85)	0.023	1.86 (0.88–3.96)	0.10	0.78 (0.50–1.21)	0.26	0.96 (0.53–1.76)	0.90
Education (per year)	1.06 (0.99–1.13)	0.12	1.09 (1.01–1.19)	0.034	1.04 (0.97–1.10)	0.27	1.03 (0.94–1.13)	0.50
English at home	1.94 (0.99–3.81)	0.06	1.70 (0.56–5.21)	0.34	1.04 (0.43–2.53)	1.291	0.97 (0.39–2.37)	0.94
Place of birth								
Oceania	—		—		1		1	
Europe	—		—		0.69 (0.44–1.08)	0.10	0.66 (0.43–1.01)	
Other	—		—		0.81 (0.37–1.75)	0.57	0.83 (0.33–2.13)	
Remoteness								
Major city	1		1		1		1	
Inner regional	1.34 (0.63–2.84)	0.43	1.31 (0.59–2.88)	0.49	1.68 (0.79–3.57)	0.17	1.43 (0.70–2.96)	0.31
Outer regional	0.83 (0.31–2.18)	0.69	1.08 (0.41–2.85)	0.87	1.01 (0.50–2.03)	0.97	0.95 (0.45–1.99)	0.88
Remote	2.16 (0.40–11.9)	0.36	2.85 (0.61–13.3)	0.18	1.00 (0.34–2.90)	0.88	0.97 (0.33–2.88)	0.96
Very remote	0.24 (0.03–1.88)	0.16	0.26 (0.04–1.55)	0.13	1.05 (0.48–2.31)	0.89	1.01 (0.39–2.60)	0.98

CI = confidence interval. ♦

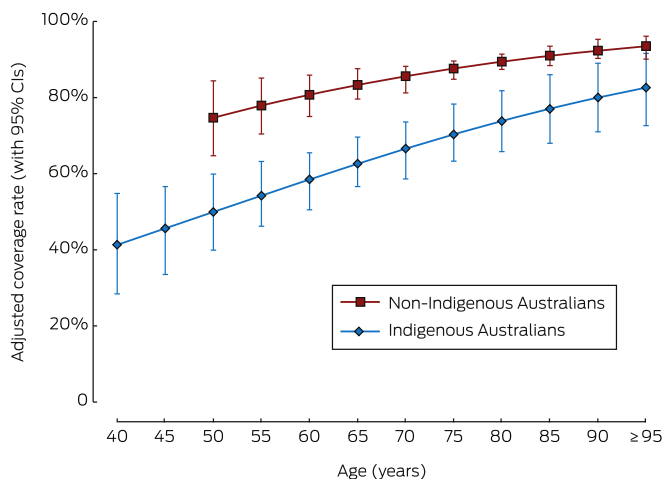
higher than that for Indigenous Australians between 2005 and 2008²¹ — is a major contributing factor to the gap in Indigenous eye health.²² The prevalence of cataract surgery among Indigenous Australians has increased from 6.5% in the National Indigenous Eye Health Survey (NIEHS) in 2008,²³ to 8.2% in our study. The 65% cataract surgery coverage rate reported by the NIEHS was based on visually significant cataract (NEHS definition 2), and is similar to the rate we found when we applied this definition (67%), indicating that the national coverage rate has remained stable. In the context of the increased prevalence of cataract surgery in the Indigenous population, a stable coverage rate may indicate that the prevalence of cataract in this population is increasing. Indeed, the prevalence of visually significant cataract found by the

NEHS — 4.0% (69 of 1738 participants; using definition 2) — was higher than in the NIEHS (2.5%),²³ suggesting that cataract surgery coverage rates need to increase further to compensate for the ageing of the Indigenous population.²²

The cataract surgery coverage rates for Indigenous people we determined were moderately higher than reported by the NIEHS for residents in Major City (63% v 57%), Outer Regional (57% v 50%) and Remote areas (71% v 67%), and moderately lower in Inner Regional areas (69% vs 82%). However, the NEHS rate of 30% for Very Remote communities is much lower than reported by the NIEHS (68%). As these two studies applied different definitions for coverage rates, these comparisons should be considered with caution. Considering the recent improvements in outreach eye health programs for very remote Indigenous communities,²⁴ this difference in coverage is unlikely to represent a dramatic change in coverage in all Very Remote Indigenous communities. It probably instead reflects heterogeneity in service availability and uptake across Indigenous communities in the most remote parts of the country, as well as some sampling variation. We may have inadvertently sampled comparatively underserved Very Remote communities, while the NIEHS may have sampled comparatively well serviced Very Remote communities. Given there were only ten Indigenous Australians in our Very Remote category, the 30% coverage rate found should be regarded with caution. Although this remoteness effect did not achieve statistical significance, such a low coverage rate is unacceptably low in any community, and future planning should identify underserved Indigenous communities in the most remote regions of Australia and develop targeted interventions for improving cataract surgery rates in these areas.

We also provide the first report on cataract surgery coverage rates for non-Indigenous Australians based on a national population-based survey. Previous population-based studies of cataract surgery in non-Indigenous Australians have focused on its prevalence rather than the surgery coverage rate, and have relied on

4 Adjusted cataract surgery coverage rates for Indigenous and non-Indigenous Australians, based on National Eye Health Survey definition 1, by age



extrapolations from subnational population studies, hospital data, or a combination of the two.^{9,11,25,26} The cataract surgery coverage rate among non-Indigenous Australians was high across all geographic region types, with no significant variation between remoteness levels. This suggests that, despite differences in waiting times for surgery associated with remoteness,² the Australian health care system is providing reasonably adequate cataract surgery services for all non-Indigenous Australians. Nevertheless, unoperated cataract still remains a leading cause of reversible vision loss in Australia, and improving cataract services in all regions further will reduce the national prevalence of vision loss.

This is the first study to determine national cataract surgery coverage rates in Australia. Our findings indicate that cataract surgery coverage rate calculations should be adjusted according to

the definition of vision impairment and the thresholds for cataract surgery applied in each country. Our results may inform improvements to cataract surgery services, especially for Indigenous Australians. As cataract is still a leading cause of vision loss and its prevalence will increase in our ageing population,³ sustaining high cataract surgery coverage rates is critical for reducing the burden of vision loss in Australia.

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