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giving sight

INTRODUCTION

Despite progress in improving eye and general health nationally, Aboriginal and Torres Strait Islander peoples are more likely than non-Indigenous Australians to suffer from eye health conditions that could be readily prevented or treated.^{1,2}

Better quality epidemiological data and specific knowledge about the health service barriers is needed on local, regional and national levels to assess eye care needs in Aboriginal regions and communities.

However, national population-based surveys of eye health are expensive, time-consuming and complicated as large samples are required to determine the prevalence of the common causes of vision impairment. The rapid assessment method of eye health and surgical services has been developed as a simple, standardized survey methodology using random cluster sampling.³

PURPOSE

To assess the reliability of the Rapid Assessment of Blindness and Vision Impairment in Indigenous Communities (RABVIIC), designed to detect common causes of vision impairment in Australian Aboriginal and Torres Strait Islander peoples by examining children aged 5 to 15 years and adults 40 years or over.

METHODS

- Study participants were assessed with RABVIIC, a new rapid methodology for assessing blindness and vision impairment in Indigenous communities.
- Participants were also examined with a definitive, standard practitioner examination for comparison purposes.
- The prevalence of each condition was determined for each age group and the degree of agreement between examination method was calculated with the weighted kappa statistic for categorical judgment.⁴

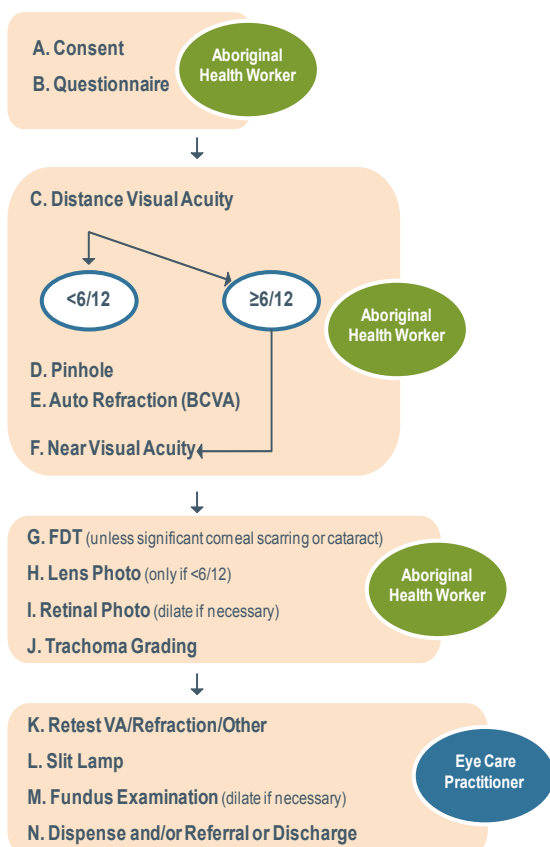


Figure 1: Example Participant Flow Diagram

RESULTS

- One hundred and twenty nine (95.5%) of 135 eligible participants were examined with the RABVIIC and 128 (94.8%) examined with the definitive examination.
- Ninety percent per cent of the retinal images were gradable.
- The assigning of cause of vision impairment (VI) was very similar for both examination methods (Table 1).
- In adults ≥ 40 years, vision impairment (VI) was detected with 71% sensitivity and 99% specificity.

Table 1: Causes of VI per eye in the total population and in eyes of persons aged 40 years and older and aged 5 to 15 years

	Rapid (5-15 and ≥ 40 years)		Rapid (Total Population)		Rapid (Total Population)	
	Count	%	Count	%	Count	%
Refractive Error	16	61.5	21	67.7	26	72.2
Cataract	3	11.5	3	9.7	3	8.3
Corneal Opacity	2	7.7	2	6.5	2	5.6
Other cause/ Not identified	5	19.2	5	16.1	5	13.9
Total	26	100	31	100	36	100

There was exact agreement in classification of presenting Visual Acuity category in 238 (93%) out of 256 participants' eyes and agreement within one step in 254 (99%, Table 2). Linearly weighted kappa was 0.79 [95% CI 0.71-0.89] and quadratic weighted kappa 0.89 [95% CI not calculable].

Table 2: Comparison of methods testing presenting visual acuity

	Definitive Examination					Total
	$\geq 6/12$ or better	$<6/12-6/18$	$<6/18-6/60$	$<6/60$	LP	
$\geq 6/12$ or better	216	4	0	0	0	220
$<6/12-6/18$	7	15	0	0	0	22
$<6/18-6/60$	2	1	4	3	0	10
$<6/60$	0	0	0	0	0	0
LP	0	0	0	1	3	4
Total	225	20	4	4	3	256

The prevalence of vision impairment in the study population as assessed by the definitive examination was 5.4% [95% CI 2.7%-8.2%]. The RABVIIC found 5.8% vision impairment [95% CI 3.0%-8.7%].

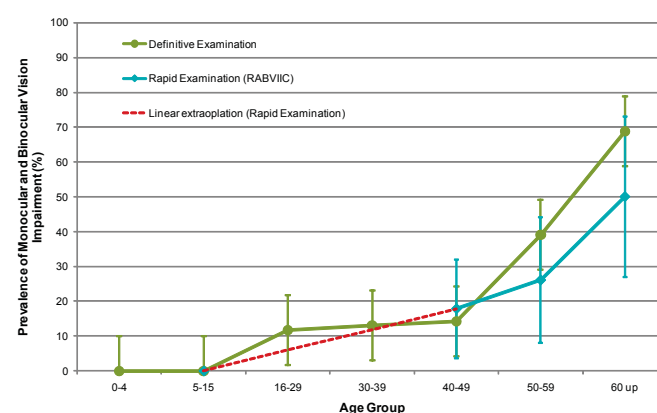


Figure 2: Prevalence of monocular and binocular vision impairment. Error bars indicate 95% confidence intervals.

- Vision impairment from refractive error was detected with 72% sensitivity and 99% specificity.

Table 3: Comparison of rapid and definitive assessments of VI due to refractive error

	Definitive Examination		Total
	RABVIIC	Refractive error	
Refractive error	18	3	21
No refractive error	7	228	235
Total	25	231	256

The definitive examination detected other ocular conditions that were not necessarily detected or recorded during the RABVIIC, although the majority were not potentially blinding and most were not causes of vision impairment nor conditions designed to be detected by the rapid assessment. A later review was recommended for most of these conditions (Table 4).

Table 4: Additional potentially vision threatening conditions detected by definitive examination

Age	Number	Examples
0-4	1	Unidentified dark lesion on optic nerve head*, infantile strabismus
16-29	2	Papilloedema* (participant already being managed for previously diagnosed benign intracranial hypertension)
≥ 40	5	Maculopathy, early maculopathy, very early macular changes.

*participant not in RABVIIC sample frame

CONCLUSION

This study demonstrated that the RABVIIC methodology is feasible, valid and appropriate for the purposes of detecting the common causes of vision impairment in Aboriginal and Torres Strait Islander peoples.

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